

**TELECOM**  
**Contrôle des connaissances 2005/2006**  
**CRYPTOGRAPHIE**  
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**durée 2 heures**

On sera attentif à la précision de la rédaction. Les résultats devront toujours être justifiés que ce soit par une démonstration, un algorithme ou une vérification numérique. Les protocoles seront décrits précisément.

**Documents et calculettes non autorisés**

**Exercice 1**

Décrivez un étage dans le système de cryptage AES

**Exercice 2**

On se place dans  $\mathbb{F}_2[X]$ . Trouvez l'inverse multiplicatif de  $X^7 + X^3 + X^2 + 1$  modulo  $X^8 + X^4 + X^3 + X + 1$

**Exercice 3**

Montrer que 257 et 263 sont premiers. Donner les diviseurs de 256 et de 262.

Alice et Bob veulent correspondre en utilisant le cryptosystème El-Gamal. Ils choisissent leurs paramètres  $p_a = 263$   $p_b = 257$ . Alice choisit  $g_a$  dans la liste 2, 3, 4, 5, 12 quels sont ses choix possibles. Bob choisit  $g_b$  dans la liste 2, 3, 4, 5, 9 quels sont ses choix possibles. Ils choisissent chacun le plus grand possible. Ils prennent comme exposant respectif  $\alpha_a = 47$ ,  $\alpha_b = 67$ .

Donnez les clefs publiques de Bob et d'Alice.

Grâce à ce cryptosystème ils s'envoient des nombres en base 10. Ils codent l'un et l'autre par blocs de 2.

Bob reçoit le message  $(y_1, y_2) = (76, 251)$ , Quel message,  $M$ , lui a envoyé Alice?

Alice veut envoyer le message 87 avec les mêmes paramètres que le message précédent. Donnez le message crypté qu'enverra Alice.

Si Bob avait choisi  $\alpha_b = 68$ , Alice aurait-elle pu lui envoyer le message  $(y_1, y_2) = (76, 251)$  (quitte à changer  $k_a$ ).

### Exercice 4

Alice et Bob veulent correspondre en employant un système RSA. Ils s'envoient des entiers entre 1 et 9 codés par blocs de 3.

Pour fabriquer sa clé Alice choisit comme nombres premiers :

$$p_a = 277 \quad q_a = 281$$

Elle veut choisir son exposant  $e_a$  dans la liste 4, 5, 6, 7, 8, 9, 10, 11. Quels peuvent être ses choix. Elle choisit le plus grand. Quelle est sa clé publique, quelle est sa clé privée ?

Pour fabriquer sa clé Bob choisit comme nombres premiers

$$p_b = 223 \quad q_b = 233$$

Il choisit son exposant  $e_b$  dans la liste 2, 3, 4, 5, 6. Quels sont ses choix possibles. Il choisit le plus petit. Quelle est sa clé privée, quelle est sa clé publique ?

Alice veut envoyer le message  $M = 785$  crypté et signé à Bob. Qu'envoie Alice ?

## Annexe 1 : Données numériques

### Tables 1

Puissances de 2 modulo 257 : Le premier chiffre représente l'exposant

[1, 2], [2, 4], [3, 8], [4, 16], [5, 32], [6, 64], [7, 128], [8, 256], [9, 255], [10, 253],  
[11, 249], [12, 241], [13, 225], [14, 193], [15, 129], [16, 1], [17, 2], [18, 4], [19, 8],  
[20, 16], [21, 32], [22, 64], [23, 128], [24, 256], [25, 255], [26, 253], [27, 249],  
[28, 241], [29, 225], [30, 193], [31, 129], [32, 1], [33, 2], [34, 4], [35, 8], [36, 16],  
[37, 32], [38, 64], [39, 128], [40, 256], [41, 255], [42, 253], [43, 249], [44, 241],  
[45, 225], [46, 193], [47, 129], [48, 1], [49, 2], [50, 4], [51, 8], [52, 16], [53, 32],  
[54, 64], [55, 128], [56, 256], [57, 255], [58, 253], [59, 249], [60, 241], [61, 225],  
[62, 193], [63, 129], [64, 1], [65, 2], [66, 4], [67, 8], [68, 16], [69, 32], [70, 64],  
[71, 128], [72, 256], [73, 255], [74, 253], [75, 249], [76, 241], [77, 225], [78, 193],  
[79, 129], [80, 1], [81, 2], [82, 4], [83, 8], [84, 16], [85, 32], [86, 64], [87, 128],  
[88, 256], [89, 255], [90, 253], [91, 249], [92, 241], [93, 225], [94, 193], [95, 129],  
[96, 1], [97, 2], [98, 4], [99, 8], [100, 16], [101, 32], [102, 64], [103, 128],  
[104, 256], [105, 255], [106, 253], [107, 249], [108, 241], [109, 225], [110, 193],  
[111, 129], [112, 1], [113, 2], [114, 4], [115, 8], [116, 16], [117, 32], [118, 64],  
[119, 128], [120, 256], [121, 255], [122, 253], [123, 249], [124, 241], [125, 225],  
[126, 193], [127, 129], [128, 1], [129, 2], [130, 4], [131, 8], [132, 16], [133, 32],  
[134, 64], [135, 128], [136, 256], [137, 255], [138, 253], [139, 249], [140, 241],  
[141, 225], [142, 193], [143, 129], [144, 1], [145, 2], [146, 4], [147, 8], [148, 16],  
[149, 32], [150, 64], [151, 128], [152, 256], [153, 255], [154, 253], [155, 249],  
[156, 241], [157, 225], [158, 193], [159, 129], [160, 1], [161, 2], [162, 4], [163, 8],  
[164, 16], [165, 32], [166, 64], [167, 128], [168, 256], [169, 255], [170, 253],  
[171, 249], [172, 241], [173, 225], [174, 193], [175, 129], [176, 1], [177, 2],  
[178, 4], [179, 8], [180, 16], [181, 32], [182, 64], [183, 128], [184, 256],  
[185, 255], [186, 253], [187, 249], [188, 241], [189, 225], [190, 193], [191, 129],  
[192, 1], [193, 2], [194, 4], [195, 8], [196, 16], [197, 32], [198, 64], [199, 128],  
[200, 256], [201, 255], [202, 253], [203, 249], [204, 241], [205, 225], [206, 193],  
[207, 129], [208, 1], [209, 2], [210, 4], [211, 8], [212, 16], [213, 32], [214, 64],  
[215, 128], [216, 256], [217, 255], [218, 253], [219, 249], [220, 241], [221, 225],  
[222, 193], [223, 129], [224, 1], [225, 2], [226, 4], [227, 8], [228, 16], [229, 32],  
[230, 64], [231, 128], [232, 256], [233, 255], [234, 253], [235, 249], [236, 241],  
[237, 225], [238, 193], [239, 129], [240, 1], [241, 2], [242, 4], [243, 8], [244, 16],  
[245, 32], [246, 64], [247, 128], [248, 256], [249, 255], [250, 253], [251, 249],  
[252, 241], [253, 225], [254, 193], [255, 129], [256, 1]

## Tables 2

Puissances de 3 modulo 257

[1, 3], [2, 9], [3, 27], [4, 81], [5, 243], [6, 215], [7, 131], [8, 136], [9, 151], [10, 196],  
[11, 74], [12, 222], [13, 152], [14, 199], [15, 83], [16, 249], [17, 233], [18, 185],  
[19, 41], [20, 123], [21, 112], [22, 79], [23, 237], [24, 197], [25, 77], [26, 231],  
[27, 179], [28, 23], [29, 69], [30, 207], [31, 107], [32, 64], [33, 192], [34, 62],  
[35, 186], [36, 44], [37, 132], [38, 139], [39, 160], [40, 223], [41, 155], [42, 208],  
[43, 110], [44, 73], [45, 219], [46, 143], [47, 172], [48, 2], [49, 6], [50, 18],  
[51, 54], [52, 162], [53, 229], [54, 173], [55, 5], [56, 15], [57, 45], [58, 135],  
[59, 148], [60, 187], [61, 47], [62, 141], [63, 166], [64, 241], [65, 209], [66, 113],  
[67, 82], [68, 246], [69, 224], [70, 158], [71, 217], [72, 137], [73, 154], [74, 205],  
[75, 101], [76, 46], [77, 138], [78, 157], [79, 214], [80, 128], [81, 127], [82, 124],  
[83, 115], [84, 88], [85, 7], [86, 21], [87, 63], [88, 189], [89, 53], [90, 159],  
[91, 220], [92, 146], [93, 181], [94, 29], [95, 87], [96, 4], [97, 12], [98, 36],  
[99, 108], [100, 67], [101, 201], [102, 89], [103, 10], [104, 30], [105, 90],  
[106, 13], [107, 39], [108, 117], [109, 94], [110, 25], [111, 75], [112, 225],  
[113, 161], [114, 226], [115, 164], [116, 235], [117, 191], [118, 59], [119, 177],  
[120, 17], [121, 51], [122, 153], [123, 202], [124, 92], [125, 19], [126, 57],  
[127, 171], [128, 256], [129, 254], [130, 248], [131, 230], [132, 176], [133, 14],  
[134, 42], [135, 126], [136, 121], [137, 106], [138, 61], [139, 183], [140, 35],  
[141, 105], [142, 58], [143, 174], [144, 8], [145, 24], [146, 72], [147, 216],  
[148, 134], [149, 145], [150, 178], [151, 20], [152, 60], [153, 180], [154, 26],  
[155, 78], [156, 234], [157, 188], [158, 50], [159, 150], [160, 193], [161, 65],  
[162, 195], [163, 71], [164, 213], [165, 125], [166, 118], [167, 97], [168, 34],  
[169, 102], [170, 49], [171, 147], [172, 184], [173, 38], [174, 114], [175, 85],  
[176, 255], [177, 251], [178, 239], [179, 203], [180, 95], [181, 28], [182, 84],  
[183, 252], [184, 242], [185, 212], [186, 122], [187, 109], [188, 70], [189, 210],  
[190, 116], [191, 91], [192, 16], [193, 48], [194, 144], [195, 175], [196, 11],  
[197, 33], [198, 99], [199, 40], [200, 120], [201, 103], [202, 52], [203, 156],  
[204, 211], [205, 119], [206, 100], [207, 43], [208, 129], [209, 130], [210, 133],  
[211, 142], [212, 169], [213, 250], [214, 236], [215, 194], [216, 68], [217, 204],  
[218, 98], [219, 37], [220, 111], [221, 76], [222, 228], [223, 170], [224, 253],  
[225, 245], [226, 221], [227, 149], [228, 190], [229, 56], [230, 168], [231, 247],  
[232, 227], [233, 167], [234, 244], [235, 218], [236, 140], [237, 163], [238, 232],  
[239, 182], [240, 32], [241, 96], [242, 31], [243, 93], [244, 22], [245, 66],  
[246, 198], [247, 80], [248, 240], [249, 206], [250, 104], [251, 55], [252, 165],  
[253, 238], [254, 200], [255, 86], [256, 1]

### Tables 3

Puissances de 4 modulo 257

[1, 4], [2, 16], [3, 64], [4, 256], [5, 253], [6, 241], [7, 193], [8, 1], [9, 4], [10, 16],  
[11, 64], [12, 256], [13, 253], [14, 241], [15, 193], [16, 1], [17, 4], [18, 16],  
[19, 64], [20, 256], [21, 253], [22, 241], [23, 193], [24, 1], [25, 4], [26, 16],  
[27, 64], [28, 256], [29, 253], [30, 241], [31, 193], [32, 1], [33, 4], [34, 16],  
[35, 64], [36, 256], [37, 253], [38, 241], [39, 193], [40, 1], [41, 4], [42, 16],  
[43, 64], [44, 256], [45, 253], [46, 241], [47, 193], [48, 1], [49, 4], [50, 16],  
[51, 64], [52, 256], [53, 253], [54, 241], [55, 193], [56, 1], [57, 4], [58, 16],  
[59, 64], [60, 256], [61, 253], [62, 241], [63, 193], [64, 1], [65, 4], [66, 16],  
[67, 64], [68, 256], [69, 253], [70, 241], [71, 193], [72, 1], [73, 4], [74, 16],  
[75, 64], [76, 256], [77, 253], [78, 241], [79, 193], [80, 1], [81, 4], [82, 16],  
[83, 64], [84, 256], [85, 253], [86, 241], [87, 193], [88, 1], [89, 4], [90, 16],  
[91, 64], [92, 256], [93, 253], [94, 241], [95, 193], [96, 1], [97, 4], [98, 16],  
[99, 64], [100, 256], [101, 253], [102, 241], [103, 193], [104, 1], [105, 4],  
[106, 16], [107, 64], [108, 256], [109, 253], [110, 241], [111, 193], [112, 1],  
[113, 4], [114, 16], [115, 64], [116, 256], [117, 253], [118, 241], [119, 193],  
[120, 1], [121, 4], [122, 16], [123, 64], [124, 256], [125, 253], [126, 241],  
[127, 193], [128, 1], [129, 4], [130, 16], [131, 64], [132, 256], [133, 253],  
[134, 241], [135, 193], [136, 1], [137, 4], [138, 16], [139, 64], [140, 256],  
[141, 253], [142, 241], [143, 193], [144, 1], [145, 4], [146, 16], [147, 64],  
[148, 256], [149, 253], [150, 241], [151, 193], [152, 1], [153, 4], [154, 16],  
[155, 64], [156, 256], [157, 253], [158, 241], [159, 193], [160, 1], [161, 4],  
[162, 16], [163, 64], [164, 256], [165, 253], [166, 241], [167, 193], [168, 1],  
[169, 4], [170, 16], [171, 64], [172, 256], [173, 253], [174, 241], [175, 193],  
[176, 1], [177, 4], [178, 16], [179, 64], [180, 256], [181, 253], [182, 241],  
[183, 193], [184, 1], [185, 4], [186, 16], [187, 64], [188, 256], [189, 253],  
[190, 241], [191, 193], [192, 1], [193, 4], [194, 16], [195, 64], [196, 256],  
[197, 253], [198, 241], [199, 193], [200, 1], [201, 4], [202, 16], [203, 64],  
[204, 256], [205, 253], [206, 241], [207, 193], [208, 1], [209, 4], [210, 16],  
[211, 64], [212, 256], [213, 253], [214, 241], [215, 193], [216, 1], [217, 4],  
[218, 16], [219, 64], [220, 256], [221, 253], [222, 241], [223, 193], [224, 1],  
[225, 4], [226, 16], [227, 64], [228, 256], [229, 253], [230, 241], [231, 193],  
[232, 1], [233, 4], [234, 16], [235, 64], [236, 256], [237, 253], [238, 241],  
[239, 193], [240, 1], [241, 4], [242, 16], [243, 64], [244, 256], [245, 253],  
[246, 241], [247, 193], [248, 1], [249, 4], [250, 16], [251, 64], [252, 256],  
[253, 253], [254, 241], [255, 193], [256, 1]

## Tables 4

Puissances de 5 modulo 257

[1, 5], [2, 25], [3, 125], [4, 111], [5, 41], [6, 205], [7, 254], [8, 242], [9, 182], [10, 139],  
[11, 181], [12, 134], [13, 156], [14, 9], [15, 45], [16, 225], [17, 97], [18, 228],  
[19, 112], [20, 46], [21, 230], [22, 122], [23, 96], [24, 223], [25, 87], [26, 178],  
[27, 119], [28, 81], [29, 148], [30, 226], [31, 102], [32, 253], [33, 237], [34, 157],  
[35, 14], [36, 70], [37, 93], [38, 208], [39, 12], [40, 60], [41, 43], [42, 215],  
[43, 47], [44, 235], [45, 147], [46, 221], [47, 77], [48, 128], [49, 126], [50, 116],  
[51, 66], [52, 73], [53, 108], [54, 26], [55, 130], [56, 136], [57, 166], [58, 59],  
[59, 38], [60, 190], [61, 179], [62, 124], [63, 106], [64, 16], [65, 80], [66, 143],  
[67, 201], [68, 234], [69, 142], [70, 196], [71, 209], [72, 17], [73, 85], [74, 168],  
[75, 69], [76, 88], [77, 183], [78, 144], [79, 206], [80, 2], [81, 10], [82, 50],  
[83, 250], [84, 222], [85, 82], [86, 153], [87, 251], [88, 227], [89, 107], [90, 21],  
[91, 105], [92, 11], [93, 55], [94, 18], [95, 90], [96, 193], [97, 194], [98, 199],  
[99, 224], [100, 92], [101, 203], [102, 244], [103, 192], [104, 189], [105, 174],  
[106, 99], [107, 238], [108, 162], [109, 39], [110, 195], [111, 204], [112, 249],  
[113, 217], [114, 57], [115, 28], [116, 140], [117, 186], [118, 159], [119, 24],  
[120, 120], [121, 86], [122, 173], [123, 94], [124, 213], [125, 37], [126, 185],  
[127, 154], [128, 256], [129, 252], [130, 232], [131, 132], [132, 146], [133, 216],  
[134, 52], [135, 3], [136, 15], [137, 75], [138, 118], [139, 76], [140, 123],  
[141, 101], [142, 248], [143, 212], [144, 32], [145, 160], [146, 29], [147, 145],  
[148, 211], [149, 27], [150, 135], [151, 161], [152, 34], [153, 170], [154, 79],  
[155, 138], [156, 176], [157, 109], [158, 31], [159, 155], [160, 4], [161, 20],  
[162, 100], [163, 243], [164, 187], [165, 164], [166, 49], [167, 245], [168, 197],  
[169, 214], [170, 42], [171, 210], [172, 22], [173, 110], [174, 36], [175, 180],  
[176, 129], [177, 131], [178, 141], [179, 191], [180, 184], [181, 149], [182, 231],  
[183, 127], [184, 121], [185, 91], [186, 198], [187, 219], [188, 67], [189, 78],  
[190, 133], [191, 151], [192, 241], [193, 177], [194, 114], [195, 56], [196, 23],  
[197, 115], [198, 61], [199, 48], [200, 240], [201, 172], [202, 89], [203, 188],  
[204, 169], [205, 74], [206, 113], [207, 51], [208, 255], [209, 247], [210, 207],  
[211, 7], [212, 35], [213, 175], [214, 104], [215, 6], [216, 30], [217, 150],  
[218, 236], [219, 152], [220, 246], [221, 202], [222, 239], [223, 167], [224, 64],  
[225, 63], [226, 58], [227, 33], [228, 165], [229, 54], [230, 13], [231, 65],  
[232, 68], [233, 83], [234, 158], [235, 19], [236, 95], [237, 218], [238, 62],  
[239, 53], [240, 8], [241, 40], [242, 200], [243, 229], [244, 117], [245, 71],  
[246, 98], [247, 233], [248, 137], [249, 171], [250, 84], [251, 163], [252, 44],  
[253, 220], [254, 72], [255, 103], [256, 1]

## Tables 5

Puissances de 2 modulo 263

[1, 2], [2, 4], [3, 8], [4, 16], [5, 32], [6, 64], [7, 128], [8, 256], [9, 249], [10, 235],  
[11, 207], [12, 151], [13, 39], [14, 78], [15, 156], [16, 49], [17, 98], [18, 196],  
[19, 129], [20, 258], [21, 253], [22, 243], [23, 223], [24, 183], [25, 103], [26, 206],  
[27, 149], [28, 35], [29, 70], [30, 140], [31, 17], [32, 34], [33, 68], [34, 136],  
[35, 9], [36, 18], [37, 36], [38, 72], [39, 144], [40, 25], [41, 50], [42, 100],  
[43, 200], [44, 137], [45, 11], [46, 22], [47, 44], [48, 88], [49, 176], [50, 89],  
[51, 178], [52, 93], [53, 186], [54, 109], [55, 218], [56, 173], [57, 83], [58, 166],  
[59, 69], [60, 138], [61, 13], [62, 26], [63, 52], [64, 104], [65, 208], [66, 153],  
[67, 43], [68, 86], [69, 172], [70, 81], [71, 162], [72, 61], [73, 122], [74, 244],  
[75, 225], [76, 187], [77, 111], [78, 222], [79, 181], [80, 99], [81, 198], [82, 133],  
[83, 3], [84, 6], [85, 12], [86, 24], [87, 48], [88, 96], [89, 192], [90, 121], [91, 242],  
[92, 221], [93, 179], [94, 95], [95, 190], [96, 117], [97, 234], [98, 205], [99, 147],  
[100, 31], [101, 62], [102, 124], [103, 248], [104, 233], [105, 203], [106, 143],  
[107, 23], [108, 46], [109, 92], [110, 184], [111, 105], [112, 210], [113, 157],  
[114, 51], [115, 102], [116, 204], [117, 145], [118, 27], [119, 54], [120, 108],  
[121, 216], [122, 169], [123, 75], [124, 150], [125, 37], [126, 74], [127, 148],  
[128, 33], [129, 66], [130, 132], [131, 1], [132, 2], [133, 4], [134, 8], [135, 16],  
[136, 32], [137, 64], [138, 128], [139, 256], [140, 249], [141, 235], [142, 207],  
[143, 151], [144, 39], [145, 78], [146, 156], [147, 49], [148, 98], [149, 196],  
[150, 129], [151, 258], [152, 253], [153, 243], [154, 223], [155, 183], [156, 103],  
[157, 206], [158, 149], [159, 35], [160, 70], [161, 140], [162, 17], [163, 34],  
[164, 68], [165, 136], [166, 9], [167, 18], [168, 36], [169, 72], [170, 144],  
[171, 25], [172, 50], [173, 100], [174, 200], [175, 137], [176, 11], [177, 22],  
[178, 44], [179, 88], [180, 176], [181, 89], [182, 178], [183, 93], [184, 186],  
[185, 109], [186, 218], [187, 173], [188, 83], [189, 166], [190, 69], [191, 138],  
[192, 13], [193, 26], [194, 52], [195, 104], [196, 208], [197, 153], [198, 43],  
[199, 86], [200, 172], [201, 81], [202, 162], [203, 61], [204, 122], [205, 244],  
[206, 225], [207, 187], [208, 111], [209, 222], [210, 181], [211, 99], [212, 198],  
[213, 133], [214, 3], [215, 6], [216, 12], [217, 24], [218, 48], [219, 96], [220, 192],  
[221, 121], [222, 242], [223, 221], [224, 179], [225, 95], [226, 190], [227, 117],  
[228, 234], [229, 205], [230, 147], [231, 31], [232, 62], [233, 124], [234, 248],  
[235, 233], [236, 203], [237, 143], [238, 23], [239, 46], [240, 92], [241, 184],  
[242, 105], [243, 210], [244, 157], [245, 51], [246, 102], [247, 204], [248, 145],  
[249, 27], [250, 54], [251, 108], [252, 216], [253, 169], [254, 75], [255, 150],  
[256, 37], [257, 74], [258, 148], [259, 33], [260, 66], [261, 132], [262, 1]

## Tables 6

puissances de 3 modulo 263

[1, 3], [2, 9], [3, 27], [4, 81], [5, 243], [6, 203], [7, 83], [8, 249], [9, 221], [10, 137],  
[11, 148], [12, 181], [13, 17], [14, 51], [15, 153], [16, 196], [17, 62], [18, 186],  
[19, 32], [20, 96], [21, 25], [22, 75], [23, 225], [24, 149], [25, 184], [26, 26],  
[27, 78], [28, 234], [29, 176], [30, 2], [31, 6], [32, 18], [33, 54], [34, 162],  
[35, 223], [36, 143], [37, 166], [38, 235], [39, 179], [40, 11], [41, 33], [42, 99],  
[43, 34], [44, 102], [45, 43], [46, 129], [47, 124], [48, 109], [49, 64], [50, 192],  
[51, 50], [52, 150], [53, 187], [54, 35], [55, 105], [56, 52], [57, 156], [58, 205],  
[59, 89], [60, 4], [61, 12], [62, 36], [63, 108], [64, 61], [65, 183], [66, 23], [67, 69],  
[68, 207], [69, 95], [70, 22], [71, 66], [72, 198], [73, 68], [74, 204], [75, 86],  
[76, 258], [77, 248], [78, 218], [79, 128], [80, 121], [81, 100], [82, 37], [83, 111],  
[84, 70], [85, 210], [86, 104], [87, 49], [88, 147], [89, 178], [90, 8], [91, 24],  
[92, 72], [93, 216], [94, 122], [95, 103], [96, 46], [97, 138], [98, 151], [99, 190],  
[100, 44], [101, 132], [102, 133], [103, 136], [104, 145], [105, 172], [106, 253],  
[107, 233], [108, 173], [109, 256], [110, 242], [111, 200], [112, 74], [113, 222],  
[114, 140], [115, 157], [116, 208], [117, 98], [118, 31], [119, 93], [120, 16],  
[121, 48], [122, 144], [123, 169], [124, 244], [125, 206], [126, 92], [127, 13],  
[128, 39], [129, 117], [130, 88], [131, 1], [132, 3], [133, 9], [134, 27], [135, 81],  
[136, 243], [137, 203], [138, 83], [139, 249], [140, 221], [141, 137], [142, 148],  
[143, 181], [144, 17], [145, 51], [146, 153], [147, 196], [148, 62], [149, 186],  
[150, 32], [151, 96], [152, 25], [153, 75], [154, 225], [155, 149], [156, 184],  
[157, 26], [158, 78], [159, 234], [160, 176], [161, 2], [162, 6], [163, 18], [164, 54],  
[165, 162], [166, 223], [167, 143], [168, 166], [169, 235], [170, 179], [171, 11],  
[172, 33], [173, 99], [174, 34], [175, 102], [176, 43], [177, 129], [178, 124],  
[179, 109], [180, 64], [181, 192], [182, 50], [183, 150], [184, 187], [185, 35],  
[186, 105], [187, 52], [188, 156], [189, 205], [190, 89], [191, 4], [192, 12],  
[193, 36], [194, 108], [195, 61], [196, 183], [197, 23], [198, 69], [199, 207],  
[200, 95], [201, 22], [202, 66], [203, 198], [204, 68], [205, 204], [206, 86],  
[207, 258], [208, 248], [209, 218], [210, 128], [211, 121], [212, 100], [213, 37],  
[214, 111], [215, 70], [216, 210], [217, 104], [218, 49], [219, 147], [220, 178],  
[221, 8], [222, 24], [223, 72], [224, 216], [225, 122], [226, 103], [227, 46],  
[228, 138], [229, 151], [230, 190], [231, 44], [232, 132], [233, 133], [234, 136],  
[235, 145], [236, 172], [237, 253], [238, 233], [239, 173], [240, 256], [241, 242],  
[242, 200], [243, 74], [244, 222], [245, 140], [246, 157], [247, 208], [248, 98],  
[249, 31], [250, 93], [251, 16], [252, 48], [253, 144], [254, 169], [255, 244],  
[256, 206], [257, 92], [258, 13], [259, 39], [260, 117], [261, 88], [262, 1]



## Tables 7

puissances de 4 modulo 263

[1, 4], [2, 16], [3, 64], [4, 256], [5, 235], [6, 151], [7, 78], [8, 49], [9, 196], [10, 258],  
[11, 243], [12, 183], [13, 206], [14, 35], [15, 140], [16, 34], [17, 136], [18, 18],  
[19, 72], [20, 25], [21, 100], [22, 137], [23, 22], [24, 88], [25, 89], [26, 93],  
[27, 109], [28, 173], [29, 166], [30, 138], [31, 26], [32, 104], [33, 153], [34, 86],  
[35, 81], [36, 61], [37, 244], [38, 187], [39, 222], [40, 99], [41, 133], [42, 6],  
[43, 24], [44, 96], [45, 121], [46, 221], [47, 95], [48, 117], [49, 205], [50, 31],  
[51, 124], [52, 233], [53, 143], [54, 46], [55, 184], [56, 210], [57, 51], [58, 204],  
[59, 27], [60, 108], [61, 169], [62, 150], [63, 74], [64, 33], [65, 132], [66, 2],  
[67, 8], [68, 32], [69, 128], [70, 249], [71, 207], [72, 39], [73, 156], [74, 98],  
[75, 129], [76, 253], [77, 223], [78, 103], [79, 149], [80, 70], [81, 17], [82, 68],  
[83, 9], [84, 36], [85, 144], [86, 50], [87, 200], [88, 11], [89, 44], [90, 176],  
[91, 178], [92, 186], [93, 218], [94, 83], [95, 69], [96, 13], [97, 52], [98, 208],  
[99, 43], [100, 172], [101, 162], [102, 122], [103, 225], [104, 111], [105, 181],  
[106, 198], [107, 3], [108, 12], [109, 48], [110, 192], [111, 242], [112, 179],  
[113, 190], [114, 234], [115, 147], [116, 62], [117, 248], [118, 203], [119, 23],  
[120, 92], [121, 105], [122, 157], [123, 102], [124, 145], [125, 54], [126, 216],  
[127, 75], [128, 37], [129, 148], [130, 66], [131, 1], [132, 4], [133, 16], [134, 64],  
[135, 256], [136, 235], [137, 151], [138, 78], [139, 49], [140, 196], [141, 258],  
[142, 243], [143, 183], [144, 206], [145, 35], [146, 140], [147, 34], [148, 136],  
[149, 18], [150, 72], [151, 25], [152, 100], [153, 137], [154, 22], [155, 88],  
[156, 89], [157, 93], [158, 109], [159, 173], [160, 166], [161, 138], [162, 26],  
[163, 104], [164, 153], [165, 86], [166, 81], [167, 61], [168, 244], [169, 187],  
[170, 222], [171, 99], [172, 133], [173, 6], [174, 24], [175, 96], [176, 121],  
[177, 221], [178, 95], [179, 117], [180, 205], [181, 31], [182, 124], [183, 233],  
[184, 143], [185, 46], [186, 184], [187, 210], [188, 51], [189, 204], [190, 27],  
[191, 108], [192, 169], [193, 150], [194, 74], [195, 33], [196, 132], [197, 2],  
[198, 8], [199, 32], [200, 128], [201, 249], [202, 207], [203, 39], [204, 156],  
[205, 98], [206, 129], [207, 253], [208, 223], [209, 103], [210, 149], [211, 70],  
[212, 17], [213, 68], [214, 9], [215, 36], [216, 144], [217, 50], [218, 200],  
[219, 11], [220, 44], [221, 176], [222, 178], [223, 186], [224, 218], [225, 83],  
[226, 69], [227, 13], [228, 52], [229, 208], [230, 43], [231, 172], [232, 162],  
[233, 122], [234, 225], [235, 111], [236, 181], [237, 198], [238, 3], [239, 12],  
[240, 48], [241, 192], [242, 242], [243, 179], [244, 190], [245, 234], [246, 147],  
[247, 62], [248, 248], [249, 203], [250, 23], [251, 92], [252, 105], [253, 157],  
[254, 102], [255, 145], [256, 54], [257, 216], [258, 75], [259, 37], [260, 148],  
[261, 66], [262, 1]

## Tables 8

puissances de 5 modulo 263

[1, 5], [2, 25], [3, 125], [4, 99], [5, 232], [6, 108], [7, 14], [8, 70], [9, 87], [10, 172],  
[11, 71], [12, 92], [13, 197], [14, 196], [15, 191], [16, 166], [17, 41], [18, 205],  
[19, 236], [20, 128], [21, 114], [22, 44], [23, 220], [24, 48], [25, 240], [26, 148],  
[27, 214], [28, 18], [29, 90], [30, 187], [31, 146], [32, 204], [33, 231], [34, 103],  
[35, 252], [36, 208], [37, 251], [38, 203], [39, 226], [40, 78], [41, 127], [42, 109],  
[43, 19], [44, 95], [45, 212], [46, 8], [47, 40], [48, 200], [49, 211], [50, 3], [51, 15],  
[52, 75], [53, 112], [54, 34], [55, 170], [56, 61], [57, 42], [58, 210], [59, 261],  
[60, 253], [61, 213], [62, 13], [63, 65], [64, 62], [65, 47], [66, 235], [67, 123],  
[68, 89], [69, 182], [70, 121], [71, 79], [72, 132], [73, 134], [74, 144], [75, 194],  
[76, 181], [77, 116], [78, 54], [79, 7], [80, 35], [81, 175], [82, 86], [83, 167],  
[84, 46], [85, 230], [86, 98], [87, 227], [88, 83], [89, 152], [90, 234], [91, 118],  
[92, 64], [93, 57], [94, 22], [95, 110], [96, 24], [97, 120], [98, 74], [99, 107],  
[100, 9], [101, 45], [102, 225], [103, 73], [104, 102], [105, 247], [106, 183],  
[107, 126], [108, 104], [109, 257], [110, 233], [111, 113], [112, 39], [113, 195],  
[114, 186], [115, 141], [116, 179], [117, 106], [118, 4], [119, 20], [120, 100],  
[121, 237], [122, 133], [123, 139], [124, 169], [125, 56], [126, 17], [127, 85],  
[128, 162], [129, 21], [130, 105], [131, 262], [132, 258], [133, 238], [134, 138],  
[135, 164], [136, 31], [137, 155], [138, 249], [139, 193], [140, 176], [141, 91],  
[142, 192], [143, 171], [144, 66], [145, 67], [146, 72], [147, 97], [148, 222],  
[149, 58], [150, 27], [151, 135], [152, 149], [153, 219], [154, 43], [155, 215],  
[156, 23], [157, 115], [158, 49], [159, 245], [160, 173], [161, 76], [162, 117],  
[163, 59], [164, 32], [165, 160], [166, 11], [167, 55], [168, 12], [169, 60],  
[170, 37], [171, 185], [172, 136], [173, 154], [174, 244], [175, 168], [176, 51],  
[177, 255], [178, 223], [179, 63], [180, 52], [181, 260], [182, 248], [183, 188],  
[184, 151], [185, 229], [186, 93], [187, 202], [188, 221], [189, 53], [190, 2],  
[191, 10], [192, 50], [193, 250], [194, 198], [195, 201], [196, 216], [197, 28],  
[198, 140], [199, 174], [200, 81], [201, 142], [202, 184], [203, 131], [204, 129],  
[205, 119], [206, 69], [207, 82], [208, 147], [209, 209], [210, 256], [211, 228],  
[212, 88], [213, 177], [214, 96], [215, 217], [216, 33], [217, 165], [218, 36],  
[219, 180], [220, 111], [221, 29], [222, 145], [223, 199], [224, 206], [225, 241],  
[226, 153], [227, 239], [228, 143], [229, 189], [230, 156], [231, 254], [232, 218],  
[233, 38], [234, 190], [235, 161], [236, 16], [237, 80], [238, 137], [239, 159],  
[240, 6], [241, 30], [242, 150], [243, 224], [244, 68], [245, 77], [246, 122],  
[247, 84], [248, 157], [249, 259], [250, 243], [251, 163], [252, 26], [253, 130],  
[254, 124], [255, 94], [256, 207], [257, 246], [258, 178], [259, 101], [260, 242],  
[261, 158], [262, 1]

## Tables 9

puissances de 76 modulo 257

[1, 76], [2, 122], [3, 20], [4, 235], [5, 127], [6, 143], [7, 74], [8, 227], [9, 33], [10, 195],  
[11, 171], [12, 146], [13, 45], [14, 79], [15, 93], [16, 129], [17, 38], [18, 61],  
[19, 10], [20, 246], [21, 192], [22, 200], [23, 37], [24, 242], [25, 145], [26, 226],  
[27, 214], [28, 73], [29, 151], [30, 168], [31, 175], [32, 193], [33, 19], [34, 159],  
[35, 5], [36, 123], [37, 96], [38, 100], [39, 147], [40, 121], [41, 201], [42, 113],  
[43, 107], [44, 165], [45, 204], [46, 84], [47, 216], [48, 225], [49, 138], [50, 208],  
[51, 131], [52, 190], [53, 48], [54, 50], [55, 202], [56, 189], [57, 229], [58, 185],  
[59, 182], [60, 211], [61, 102], [62, 42], [63, 108], [64, 241], [65, 69], [66, 104],  
[67, 194], [68, 95], [69, 24], [70, 25], [71, 101], [72, 223], [73, 243], [74, 221],  
[75, 91], [76, 234], [77, 51], [78, 21], [79, 54], [80, 249], [81, 163], [82, 52],  
[83, 97], [84, 176], [85, 12], [86, 141], [87, 179], [88, 240], [89, 250], [90, 239],  
[91, 174], [92, 117], [93, 154], [94, 139], [95, 27], [96, 253], [97, 210], [98, 26],  
[99, 177], [100, 88], [101, 6], [102, 199], [103, 218], [104, 120], [105, 125],  
[106, 248], [107, 87], [108, 187], [109, 77], [110, 198], [111, 142], [112, 255],  
[113, 105], [114, 13], [115, 217], [116, 44], [117, 3], [118, 228], [119, 109],  
[120, 60], [121, 191], [122, 124], [123, 172], [124, 222], [125, 167], [126, 99],  
[127, 71], [128, 256], [129, 181], [130, 135], [131, 237], [132, 22], [133, 130],  
[134, 114], [135, 183], [136, 30], [137, 224], [138, 62], [139, 86], [140, 111],  
[141, 212], [142, 178], [143, 164], [144, 128], [145, 219], [146, 196], [147, 247],  
[148, 11], [149, 65], [150, 57], [151, 220], [152, 15], [153, 112], [154, 31],  
[155, 43], [156, 184], [157, 106], [158, 89], [159, 82], [160, 64], [161, 238],  
[162, 98], [163, 252], [164, 134], [165, 161], [166, 157], [167, 110], [168, 136],  
[169, 56], [170, 144], [171, 150], [172, 92], [173, 53], [174, 173], [175, 41],  
[176, 32], [177, 119], [178, 49], [179, 126], [180, 67], [181, 209], [182, 207],  
[183, 55], [184, 68], [185, 28], [186, 72], [187, 75], [188, 46], [189, 155],  
[190, 215], [191, 149], [192, 16], [193, 188], [194, 153], [195, 63], [196, 162],  
[197, 233], [198, 232], [199, 156], [200, 34], [201, 14], [202, 36], [203, 166],  
[204, 23], [205, 206], [206, 236], [207, 203], [208, 8], [209, 94], [210, 205],  
[211, 160], [212, 81], [213, 245], [214, 116], [215, 78], [216, 17], [217, 7],  
[218, 18], [219, 83], [220, 140], [221, 103], [222, 118], [223, 230], [224, 4],  
[225, 47], [226, 231], [227, 80], [228, 169], [229, 251], [230, 58], [231, 39],  
[232, 137], [233, 132], [234, 9], [235, 170], [236, 70], [237, 180], [238, 59],  
[239, 115], [240, 2], [241, 152], [242, 244], [243, 40], [244, 213], [245, 254],  
[246, 29], [247, 148], [248, 197], [249, 66], [250, 133], [251, 85], [252, 35],  
[253, 90], [254, 158], [255, 186], [256, 1]

## Tables 10

puissances de 76 modulo 263

[1, 76], [2, 253], [3, 29], [4, 100], [5, 236], [6, 52], [7, 7], [8, 6], [9, 193], [10, 203],  
[11, 174], [12, 74], [13, 101], [14, 49], [15, 42], [16, 36], [17, 106], [18, 166],  
[19, 255], [20, 181], [21, 80], [22, 31], [23, 252], [24, 216], [25, 110], [26, 207],  
[27, 215], [28, 34], [29, 217], [30, 186], [31, 197], [32, 244], [33, 134], [34, 190],  
[35, 238], [36, 204], [37, 250], [38, 64], [39, 130], [40, 149], [41, 15], [42, 88],  
[43, 113], [44, 172], [45, 185], [46, 121], [47, 254], [48, 105], [49, 90], [50, 2],  
[51, 152], [52, 243], [53, 58], [54, 200], [55, 209], [56, 104], [57, 14], [58, 12],  
[59, 123], [60, 143], [61, 85], [62, 148], [63, 202], [64, 98], [65, 84], [66, 72],  
[67, 212], [68, 69], [69, 247], [70, 99], [71, 160], [72, 62], [73, 241], [74, 169],  
[75, 220], [76, 151], [77, 167], [78, 68], [79, 171], [80, 109], [81, 131], [82, 225],  
[83, 5], [84, 117], [85, 213], [86, 145], [87, 237], [88, 128], [89, 260], [90, 35],  
[91, 30], [92, 176], [93, 226], [94, 81], [95, 107], [96, 242], [97, 245], [98, 210],  
[99, 180], [100, 4], [101, 41], [102, 223], [103, 116], [104, 137], [105, 155],  
[106, 208], [107, 28], [108, 24], [109, 246], [110, 23], [111, 170], [112, 33],  
[113, 141], [114, 196], [115, 168], [116, 144], [117, 161], [118, 138], [119, 231],  
[120, 198], [121, 57], [122, 124], [123, 219], [124, 75], [125, 177], [126, 39],  
[127, 71], [128, 136], [129, 79], [130, 218], [131, 262], [132, 187], [133, 10],  
[134, 234], [135, 163], [136, 27], [137, 211], [138, 256], [139, 257], [140, 70],  
[141, 60], [142, 89], [143, 189], [144, 162], [145, 214], [146, 221], [147, 227],  
[148, 157], [149, 97], [150, 8], [151, 82], [152, 183], [153, 232], [154, 11],  
[155, 47], [156, 153], [157, 56], [158, 48], [159, 229], [160, 46], [161, 77],  
[162, 66], [163, 19], [164, 129], [165, 73], [166, 25], [167, 59], [168, 13],  
[169, 199], [170, 133], [171, 114], [172, 248], [173, 175], [174, 150], [175, 91],  
[176, 78], [177, 142], [178, 9], [179, 158], [180, 173], [181, 261], [182, 111],  
[183, 20], [184, 205], [185, 63], [186, 54], [187, 159], [188, 249], [189, 251],  
[190, 140], [191, 120], [192, 178], [193, 115], [194, 61], [195, 165], [196, 179],  
[197, 191], [198, 51], [199, 194], [200, 16], [201, 164], [202, 103], [203, 201],  
[204, 22], [205, 94], [206, 43], [207, 112], [208, 96], [209, 195], [210, 92],  
[211, 154], [212, 132], [213, 38], [214, 258], [215, 146], [216, 50], [217, 118],  
[218, 26], [219, 135], [220, 3], [221, 228], [222, 233], [223, 87], [224, 37],  
[225, 182], [226, 156], [227, 21], [228, 18], [229, 53], [230, 83], [231, 259],  
[232, 222], [233, 40], [234, 147], [235, 126], [236, 108], [237, 55], [238, 235],  
[239, 239], [240, 17], [241, 240], [242, 93], [243, 230], [244, 122], [245, 67],  
[246, 95], [247, 119], [248, 102], [249, 125], [250, 32], [251, 65], [252, 206],  
[253, 139], [254, 44], [255, 188], [256, 86], [257, 224], [258, 192], [259, 127],  
[260, 184], [261, 45], [262, 1]

## Tables 11

Table des couples  $[i, t_1(i) = 785^i \bmod 77837]$  pour  $1 \leq i \leq 100$

[1, 785], [2, 71366], [3, 57507], [4, 75372], [5, 10900], [6, 72267], [7, 64259], [8, 4939],  
[9, 63102], [10, 30738], [11, 77697], [12, 45774], [13, 49733], [14, 44068],  
[15, 33752], [16, 30740], [17, 1430], [18, 32832], [19, 9073], [20, 39138],  
[21, 55552], [22, 19600], [23, 52111], [24, 42710], [25, 57440], [26, 22777],  
[27, 55272], [28, 33311], [29, 73740], [30, 53009], [31, 47107], [32, 6420],  
[33, 58132], [34, 21138], [35, 14049], [36, 53448], [37, 2537], [38, 45620],  
[39, 6680], [40, 28721], [41, 51092], [42, 21165], [43, 35244], [44, 34405],  
[45, 76323], [46, 56902], [47, 67469], [48, 34005], [49, 73671], [50, 76681],  
[51, 26584], [52, 8124], [53, 72543], [54, 47408], [55, 9194], [56, 56286],  
[57, 50931], [58, 50454], [59, 65194], [60, 38381], [61, 6166], [62, 14416],  
[63, 30195], [64, 40627], [65, 56862], [66, 36069], [67, 59334], [68, 30664],  
[69, 19607], [70, 57606], [71, 75250], [72, 70804], [73, 5522], [74, 53735],  
[75, 72158], [76, 56531], [77, 9745], [78, 21799], [79, 65912], [80, 57152],  
[81, 30208], [82, 50832], [83, 50576], [84, 5290], [85, 27289], [86, 16690],  
[87, 25034], [88, 36766], [89, 61620], [90, 34923], [91, 15931], [92, 51915],  
[93, 44524], [94, 2527], [95, 37770], [96, 71390], [97, 76347], [98, 75742],  
[99, 67839], [100, 13107]

## Tables 12

Table des couples  $[i, t_8(i) = 785^i \bmod 51959]$  pour  $1 \leq i \leq 100$

[1, 785], [2, 44676], [3, 50294], [4, 43909], [5, 19748], [6, 18398], [7, 49787], [8, 9627],  
[9, 23140], [10, 31209], [11, 26376], [12, 25478], [13, 47974], [14, 41274],  
[15, 29633], [16, 36232], [17, 20547], [18, 22105], [19, 50078], [20, 30226],  
[21, 34106], [22, 14325], [23, 21981], [24, 4697], [25, 50015], [26, 32730],  
[27, 25304], [28, 15302], [29, 9541], [30, 7589], [31, 34039], [32, 13689],  
[33, 42311], [34, 12334], [35, 17816], [36, 8589], [37, 39654], [38, 4949],  
[39, 39999], [40, 15979], [41, 21396], [42, 13103], [43, 49932], [44, 19534],  
[45, 6285], [46, 49579], [47, 2224], [48, 31193], [49, 13816], [50, 38088],  
[51, 22655], [52, 14197], [53, 25419], [54, 1659], [55, 3340], [56, 23950],  
[57, 43551], [58, 50472], [59, 27762], [60, 22349], [61, 33782], [62, 19780],  
[63, 43518], [64, 24567], [65, 8306], [66, 25335], [67, 39637], [68, 43563],  
[69, 7933], [70, 44284], [71, 2369], [72, 41100], [73, 48920], [74, 4499],  
[75, 50462], [76, 19912], [77, 43220], [78, 50432], [79, 48321], [80, 1915],  
[81, 48423], [82, 30026], [83, 32983], [84, 16073], [85, 43227], [86, 3968],  
[87, 49299], [88, 42219], [89, 44032], [90, 12385], [91, 5892], [92, 869],  
[93, 6698], [94, 10071], [95, 7967], [96, 19015], [97, 14542], [98, 36449],  
[99, 35015], [100, 464]

### Tables 13

Table des couples  $[14000 + i, t_2(i) = 785^{14000+i} \bmod 77837]$  pour  $1 \leq i \leq 100$

[14001, 3876], [14002, 7017], [14003, 59755], [14004, 49801], [14005, 19611],  
[14006, 60746], [14007, 49366], [14008, 67321], [14009, 73499], [14010, 19498],  
[14011, 49878], [14012, 2219], [14013, 29501], [14014, 40696], [14015, 33190],  
[14016, 56592], [14017, 57630], [14018, 16253], [14019, 71174], [14020, 62461],  
[14021, 72412], [14022, 22410], [14023, 688], [14024, 73058], [14025, 62498],  
[14026, 23620], [14027, 16494], [14028, 26848], [14029, 59690], [14030, 76613],  
[14031, 51041], [14032, 58967], [14033, 53917], [14034, 59354], [14035, 46364],  
[14036, 45861], [14037, 40191], [14038, 25950], [14039, 55293], [14040, 49796],  
[14041, 15686], [14042, 15264], [14043, 73179], [14044, 1809], [14045, 18999],  
[14046, 47348], [14047, 39931], [14048, 55361], [14049, 25339], [14050, 42680],  
[14051, 33890], [14052, 61233], [14053, 42476], [14054, 29424], [14055, 58088],  
[14056, 64435], [14057, 65262], [14058, 13924], [14059, 33160], [14060, 33042],  
[14061, 18249], [14062, 3457], [14063, 67287], [14064, 46809], [14065, 6001],  
[14066, 40565], [14067, 8192], [14068, 48086], [14069, 74402], [14070, 27820],  
[14071, 44340], [14072, 13761], [14073, 60879], [14074, 75934], [14075, 62885],  
[14076, 16067], [14077, 3001], [14078, 20675], [14079, 39779], [14080, 13878],  
[14081, 74887], [14082, 19360], [14083, 19385], [14084, 39010], [14085, 32909],  
[14086, 69518], [14087, 7893], [14088, 46882], [14089, 63306], [14090, 35204],  
[14091, 3005], [14092, 23815], [14093, 13895], [14094, 10395], [14095, 65027],  
[14096, 62960], [14097, 74942], [14098, 62535], [14099, 52665], [14100, 10578]

## Tables 14

Table des couples  $[t_2(i), t_4(i) = t_2(i)^5 \pmod{51959}]$  pour  $1 \leq i \leq 100$

[3876, 29484], [7017, 19873], [59755, 20562], [49801, 33825], [19611, 3570],  
[60746, 8072], [49366, 1201], [67321, 6681], [73499, 41419], [19498, 45999],  
[49878, 38055], [2219, 1516], [29501, 2224], [40696, 36432], [33190, 24876],  
[56592, 46765], [57630, 43953], [16253, 13667], [71174, 2999], [62461, 13236],  
[72412, 5110], [22410, 35317], [688, 24883], [73058, 24986], [62498, 2875],  
[23620, 30016], [16494, 32125], [26848, 15248], [59690, 15978], [76613, 32398],  
[51041, 10545], [58967, 41645], [53917, 47465], [59354, 34291], [46364, 1388],  
[45861, 43809], [40191, 18829], [25950, 22094], [55293, 6645], [49796, 49880],  
[15686, 7348], [15264, 1634], [73179, 22323], [1809, 4246], [18999, 4602],  
[47348, 49658], [39931, 6638], [55361, 3046], [25339, 38716], [42680, 26076],  
[33890, 48866], [61233, 41644], [42476, 46069], [29424, 11632], [58088, 45810],  
[64435, 1597], [65262, 46039], [13924, 13353], [33160, 3863], [33042, 29136],  
[18249, 20862], [3457, 676], [67287, 31987], [46809, 46751], [6001, 2949],  
[40565, 51211], [8192, 51388], [48086, 33433], [74402, 21095], [27820, 28409],  
[44340, 25099], [13761, 40369], [60879, 21185], [75934, 49081], [62885, 23637],  
[16067, 22791], [3001, 21613], [20675, 45769], [39779, 1163], [13878, 26050],  
[74887, 19505], [19360, 5902], [19385, 3092], [39010, 47439], [32909, 23694],  
[69518, 50422], [7893, 307], [46882, 50357], [63306, 36413], [35204, 310],  
[3005, 51644], [23815, 21232], [13895, 10145], [10395, 44164], [65027, 19550],  
[62960, 13681], [74942, 32060], [62535, 16892], [52665, 38010], [10578, 22584]



## Tables 15

Table des couples  $[10300 + i, t_5(i) = 785^{10300+i} \bmod 51959]$  pour  $1 \leq i \leq 100$

[10301, 3669], [10302, 22420], [10303, 37558], [10304, 22277], [10305, 29221],  
[10306, 24566], [10307, 7521], [10308, 32618], [10309, 41302], [10310, 51613],  
[10311, 40144], [10312, 25886], [10313, 4541], [10314, 31473], [10315, 25780],  
[10316, 25249], [10317, 24086], [10318, 46393], [10319, 47205], [10320, 9158],  
[10321, 18688], [10322, 17642], [10323, 27876], [10324, 7921], [10325, 34864],  
[10326, 37806], [10327, 9121], [10328, 41602], [10329, 27318], [10330, 37522],  
[10331, 45976], [10332, 31614], [10333, 32547], [10334, 37526], [10335, 49116],  
[10336, 2482], [10337, 25887], [10338, 5326], [10339, 24190], [10340, 24115],  
[10341, 17199], [10342, 43834], [10343, 12832], [10344, 45033], [10345, 18785],  
[10346, 41828], [10347, 48851], [10348, 2293], [10349, 33399], [10350, 30879],  
[10351, 27121], [10352, 38754], [10353, 25875], [10354, 47865], [10355, 7668],  
[10356, 44095], [10357, 9881], [10358, 14694], [10359, 51851], [10360, 19138],  
[10361, 7179], [10362, 23943], [10363, 38056], [10364, 49494], [10365, 39417],  
[10366, 26740], [10367, 51423], [10368, 46871], [10369, 6763], [10370, 9137],  
[10371, 2203], [10372, 14708], [10373, 10882], [10374, 21094], [10375, 35828],  
[10376, 15161], [10377, 2774], [10378, 47271], [10379, 9009], [10380, 5641],  
[10381, 11670], [10382, 16166], [10383, 12314], [10384, 2116], [10385, 50331],  
[10386, 20995], [10387, 10072], [10388, 8752], [10389, 11732], [10390, 12877],  
[10391, 28399], [10392, 2804], [10393, 18862], [10394, 50314], [10395, 7650],  
[10396, 29965], [10397, 37057], [10398, 44664], [10399, 40874], [10400, 27387]

## Tables 16

Table des couples  $[t_5(i), t_7(i) = t_5(i)^{11} \pmod{77837}]$  pour  $1 \leq i \leq 100$

[3669, 40067], [22420, 57384], [37558, 44123], [22277, 33124], [29221, 49494],  
[24566, 22702], [7521, 20637], [32618, 39432], [41302, 11487], [51613, 76531],  
[40144, 9959], [25886, 24981], [4541, 66799], [31473, 64912], [25780, 75063],  
[25249, 2909], [24086, 49747], [46393, 12325], [47205, 71974], [9158, 27932],  
[18688, 71847], [17642, 57665], [27876, 807], [7921, 26748], [34864, 10931],  
[37806, 3461], [9121, 57797], [41602, 73331], [27318, 49677], [37522, 50614],  
[45976, 64798], [31614, 14804], [32547, 56482], [37526, 37374], [49116, 70647],  
[2482, 19276], [25887, 26298], [5326, 14239], [24190, 10605], [24115, 45559],  
[17199, 14671], [43834, 34250], [12832, 27013], [45033, 25003], [18785, 35588],  
[41828, 32133], [48851, 48130], [2293, 4698], [33399, 1458], [30879, 67974],  
[27121, 10], [38754, 71728], [25875, 30667], [47865, 28709], [7668, 35803],  
[44095, 40091], [9881, 46457], [14694, 52189], [51851, 70007], [19138, 21319],  
[7179, 8893], [23943, 33217], [38056, 6783], [49494, 37566], [39417, 29177],  
[26740, 17624], [51423, 4777], [46871, 50142], [6763, 21283], [9137, 44127],  
[2203, 64428], [14708, 2523], [10882, 52313], [21094, 14820], [35828, 3012],  
[15161, 40653], [2774, 35372], [47271, 56381], [9009, 14295], [5641, 56809],  
[11670, 64664], [16166, 17737], [12314, 11340], [2116, 55391], [50331, 17082],  
[20995, 28672], [10072, 29371], [8752, 37274], [11732, 49234], [12877, 28101],  
[28399, 3215], [2804, 48143], [18862, 28546], [50314, 30461], [7650, 71274],  
[29965, 20011], [37057, 9108], [44664, 44004], [40874, 68194], [27387, 45582]