

1. $\int_{-\infty}^{\infty} \delta(x) dx = 1$ $\int_{-\infty}^{\infty} \delta(x) f(x) dx = f(0)$ $\int_{-\infty}^{\infty} \delta(x) \delta(x) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) f(x) dx = f(a)$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) f(x) dx = f(a)$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) f(x) dx = f(a)$

2. $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) f(x) dx = f(a)$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) \delta(x-d) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) \delta(x-d) f(x) dx = f(a)$

3. $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) \delta(x-d) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) \delta(x-d) f(x) dx = f(a)$

4. $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) \delta(x-d) \delta(x-e) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) \delta(x-d) \delta(x-e) f(x) dx = f(a)$

5. $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) \delta(x-d) \delta(x-e) \delta(x-f) dx = 0$ $\int_{-\infty}^{\infty} \delta(x) \delta(x-a) \delta(x-b) \delta(x-c) \delta(x-d) \delta(x-e) \delta(x-f) f(x) dx = f(a)$

1. $f(x) = x^2 + 2x + 1$
 $f'(x) = 2x + 2$
 $f''(x) = 2$
 $f(1) = 1 + 2 + 1 = 4$
 $f'(1) = 2 + 2 = 4$
 $f''(1) = 2$
 2. $f(x) = x^3 - 3x^2 + 2x - 1$
 $f'(x) = 3x^2 - 6x + 2$
 $f''(x) = 6x - 6$
 $f(2) = 8 - 12 + 4 - 1 = -1$
 $f'(2) = 12 - 12 + 2 = 2$
 $f''(2) = 12 - 6 = 6$
 3. $f(x) = x^4 - 4x^3 + 6x^2 - 4x + 1$
 $f'(x) = 4x^3 - 12x^2 + 12x - 4$
 $f''(x) = 12x^2 - 24x + 12$
 $f(1) = 1 - 4 + 6 - 4 + 1 = 0$
 $f'(1) = 4 - 12 + 12 - 4 = 0$
 $f''(1) = 12 - 24 + 12 = 0$
 4. $f(x) = x^5 - 5x^4 + 10x^3 - 10x^2 + 5x - 1$
 $f'(x) = 5x^4 - 20x^3 + 30x^2 - 20x + 5$
 $f''(x) = 20x^3 - 60x^2 + 60x - 20$
 $f(1) = 1 - 5 + 10 - 10 + 5 - 1 = 0$
 $f'(1) = 5 - 20 + 30 - 20 + 5 = 0$
 $f''(1) = 20 - 60 + 60 - 20 = 0$
 5. $f(x) = x^6 - 6x^5 + 15x^4 - 20x^3 + 15x^2 - 6x + 1$
 $f'(x) = 6x^5 - 30x^4 + 60x^3 - 60x^2 + 30x - 6$
 $f''(x) = 30x^4 - 120x^3 + 180x^2 - 120x + 30$
 $f(1) = 1 - 6 + 15 - 20 + 15 - 6 + 1 = 0$
 $f'(1) = 6 - 30 + 60 - 60 + 30 - 6 = 0$
 $f''(1) = 30 - 120 + 180 - 120 + 30 = 0$

1. $f(x) = x^2 - 3x + 2$
 $f(1) = 1^2 - 3 \cdot 1 + 2 = 1 - 3 + 2 = 0$
 $f(2) = 2^2 - 3 \cdot 2 + 2 = 4 - 6 + 2 = 0$
 $f(3) = 3^2 - 3 \cdot 3 + 2 = 9 - 9 + 2 = 2$
 $f(4) = 4^2 - 3 \cdot 4 + 2 = 16 - 12 + 2 = 6$
 $f(5) = 5^2 - 3 \cdot 5 + 2 = 25 - 15 + 2 = 12$
 $f(6) = 6^2 - 3 \cdot 6 + 2 = 36 - 18 + 2 = 20$
 $f(7) = 7^2 - 3 \cdot 7 + 2 = 49 - 21 + 2 = 30$
 $f(8) = 8^2 - 3 \cdot 8 + 2 = 64 - 24 + 2 = 42$
 $f(9) = 9^2 - 3 \cdot 9 + 2 = 81 - 27 + 2 = 56$
 $f(10) = 10^2 - 3 \cdot 10 + 2 = 100 - 30 + 2 = 72$
 $f(11) = 11^2 - 3 \cdot 11 + 2 = 121 - 33 + 2 = 90$
 $f(12) = 12^2 - 3 \cdot 12 + 2 = 144 - 36 + 2 = 110$
 $f(13) = 13^2 - 3 \cdot 13 + 2 = 169 - 39 + 2 = 132$
 $f(14) = 14^2 - 3 \cdot 14 + 2 = 196 - 42 + 2 = 156$
 $f(15) = 15^2 - 3 \cdot 15 + 2 = 225 - 45 + 2 = 182$
 $f(16) = 16^2 - 3 \cdot 16 + 2 = 256 - 48 + 2 = 210$
 $f(17) = 17^2 - 3 \cdot 17 + 2 = 289 - 51 + 2 = 240$
 $f(18) = 18^2 - 3 \cdot 18 + 2 = 324 - 54 + 2 = 272$
 $f(19) = 19^2 - 3 \cdot 19 + 2 = 361 - 57 + 2 = 306$
 $f(20) = 20^2 - 3 \cdot 20 + 2 = 400 - 60 + 2 = 342$
 $f(21) = 21^2 - 3 \cdot 21 + 2 = 441 - 63 + 2 = 380$
 $f(22) = 22^2 - 3 \cdot 22 + 2 = 484 - 66 + 2 = 420$
 $f(23) = 23^2 - 3 \cdot 23 + 2 = 529 - 69 + 2 = 462$
 $f(24) = 24^2 - 3 \cdot 24 + 2 = 576 - 72 + 2 = 506$
 $f(25) = 25^2 - 3 \cdot 25 + 2 = 625 - 75 + 2 = 552$
 $f(26) = 26^2 - 3 \cdot 26 + 2 = 676 - 78 + 2 = 600$
 $f(27) = 27^2 - 3 \cdot 27 + 2 = 729 - 81 + 2 = 650$
 $f(28) = 28^2 - 3 \cdot 28 + 2 = 784 - 84 + 2 = 702$
 $f(29) = 29^2 - 3 \cdot 29 + 2 = 841 - 87 + 2 = 756$
 $f(30) = 30^2 - 3 \cdot 30 + 2 = 900 - 90 + 2 = 812$
 $f(31) = 31^2 - 3 \cdot 31 + 2 = 961 - 93 + 2 = 870$
 $f(32) = 32^2 - 3 \cdot 32 + 2 = 1024 - 96 + 2 = 930$
 $f(33) = 33^2 - 3 \cdot 33 + 2 = 1089 - 99 + 2 = 992$
 $f(34) = 34^2 - 3 \cdot 34 + 2 = 1156 - 102 + 2 = 1056$
 $f(35) = 35^2 - 3 \cdot 35 + 2 = 1225 - 105 + 2 = 1122$
 $f(36) = 36^2 - 3 \cdot 36 + 2 = 1296 - 108 + 2 = 1190$
 $f(37) = 37^2 - 3 \cdot 37 + 2 = 1369 - 111 + 2 = 1260$
 $f(38) = 38^2 - 3 \cdot 38 + 2 = 1444 - 114 + 2 = 1332$
 $f(39) = 39^2 - 3 \cdot 39 + 2 = 1521 - 117 + 2 = 1406$
 $f(40) = 40^2 - 3 \cdot 40 + 2 = 1600 - 120 + 2 = 1482$
 $f(41) = 41^2 - 3 \cdot 41 + 2 = 1681 - 123 + 2 = 1560$
 $f(42) = 42^2 - 3 \cdot 42 + 2 = 1764 - 126 + 2 = 1640$
 $f(43) = 43^2 - 3 \cdot 43 + 2 = 1849 - 129 + 2 = 1722$
 $f(44) = 44^2 - 3 \cdot 44 + 2 = 1936 - 132 + 2 = 1806$
 $f(45) = 45^2 - 3 \cdot 45 + 2 = 2025 - 135 + 2 = 1892$
 $f(46) = 46^2 - 3 \cdot 46 + 2 = 2116 - 138 + 2 = 1980$
 $f(47) = 47^2 - 3 \cdot 47 + 2 = 2209 - 141 + 2 = 2070$
 $f(48) = 48^2 - 3 \cdot 48 + 2 = 2304 - 144 + 2 = 2162$
 $f(49) = 49^2 - 3 \cdot 49 + 2 = 2401 - 147 + 2 = 2256$
 $f(50) = 50^2 - 3 \cdot 50 + 2 = 2500 - 150 + 2 = 2352$
 $f(51) = 51^2 - 3 \cdot 51 + 2 = 2601 - 153 + 2 = 2450$
 $f(52) = 52^2 - 3 \cdot 52 + 2 = 2704 - 156 + 2 = 2550$
 $f(53) = 53^2 - 3 \cdot 53 + 2 = 2809 - 159 + 2 = 2652$
 $f(54) = 54^2 - 3 \cdot 54 + 2 = 2916 - 162 + 2 = 2756$
 $f(55) = 55^2 - 3 \cdot 55 + 2 = 3025 - 165 + 2 = 2862$
 $f(56) = 56^2 - 3 \cdot 56 + 2 = 3136 - 168 + 2 = 2970$
 $f(57) = 57^2 - 3 \cdot 57 + 2 = 3249 - 171 + 2 = 3080$
 $f(58) = 58^2 - 3 \cdot 58 + 2 = 3364 - 174 + 2 = 3192$
 $f(59) = 59^2 - 3 \cdot 59 + 2 = 3481 - 177 + 2 = 3306$
 $f(60) = 60^2 - 3 \cdot 60 + 2 = 3600 - 180 + 2 = 3422$
 $f(61) = 61^2 - 3 \cdot 61 + 2 = 3721 - 183 + 2 = 3540$
 $f(62) = 62^2 - 3 \cdot 62 + 2 = 3844 - 186 + 2 = 3660$
 $f(63) = 63^2 - 3 \cdot 63 + 2 = 3969 - 189 + 2 = 3782$
 $f(64) = 64^2 - 3 \cdot 64 + 2 = 4096 - 192 + 2 = 3906$
 $f(65) = 65^2 - 3 \cdot 65 + 2 = 4225 - 195 + 2 = 4032$
 $f(66) = 66^2 - 3 \cdot 66 + 2 = 4356 - 198 + 2 = 4160$
 $f(67) = 67^2 - 3 \cdot 67 + 2 = 4489 - 201 + 2 = 4290$
 $f(68) = 68^2 - 3 \cdot 68 + 2 = 4624 - 204 + 2 = 4422$
 $f(69) = 69^2 - 3 \cdot 69 + 2 = 4761 - 207 + 2 = 4556$
 $f(70) = 70^2 - 3 \cdot 70 + 2 = 4900 - 210 + 2 = 4692$
 $f(71) = 71^2 - 3 \cdot 71 + 2 = 5041 - 213 + 2 = 4830$
 $f(72) = 72^2 - 3 \cdot 72 + 2 = 5184 - 216 + 2 = 4970$
 $f(73) = 73^2 - 3 \cdot 73 + 2 = 5329 - 219 + 2 = 5112$
 $f(74) = 74^2 - 3 \cdot 74 + 2 = 5476 - 222 + 2 = 5256$
 $f(75) = 75^2 - 3 \cdot 75 + 2 = 5625 - 225 + 2 = 5402$
 $f(76) = 76^2 - 3 \cdot 76 + 2 = 5776 - 228 + 2 = 5550$
 $f(77) = 77^2 - 3 \cdot 77 + 2 = 5929 - 231 + 2 = 5700$
 $f(78) = 78^2 - 3 \cdot 78 + 2 = 6084 - 234 + 2 = 5852$
 $f(79) = 79^2 - 3 \cdot 79 + 2 = 6241 - 237 + 2 = 6006$
 $f(80) = 80^2 - 3 \cdot 80 + 2 = 6400 - 240 + 2 = 6162$
 $f(81) = 81^2 - 3 \cdot 81 + 2 = 6561 - 243 + 2 = 6320$
 $f(82) = 82^2 - 3 \cdot 82 + 2 = 6724 - 246 + 2 = 6480$
 $f(83) = 83^2 - 3 \cdot 83 + 2 = 6889 - 249 + 2 = 6642$
 $f(84) = 84^2 - 3 \cdot 84 + 2 = 7056 - 252 + 2 = 6806$
 $f(85) = 85^2 - 3 \cdot 85 + 2 = 7225 - 255 + 2 = 6972$
 $f(86) = 86^2 - 3 \cdot 86 + 2 = 7396 - 258 + 2 = 7140$
 $f(87) = 87^2 - 3 \cdot 87 + 2 = 7569 - 261 + 2 = 7310$
 $f(88) = 88^2 - 3 \cdot 88 + 2 = 7744 - 264 + 2 = 7482$
 $f(89) = 89^2 - 3 \cdot 89 + 2 = 7921 - 267 + 2 = 7656$
 $f(90) = 90^2 - 3 \cdot 90 + 2 = 8100 - 270 + 2 = 7832$
 $f(91) = 91^2 - 3 \cdot 91 + 2 = 8281 - 273 + 2 = 8010$
 $f(92) = 92^2 - 3 \cdot 92 + 2 = 8464 - 276 + 2 = 8190$
 $f(93) = 93^2 - 3 \cdot 93 + 2 = 8649 - 279 + 2 = 8372$
 $f(94) = 94^2 - 3 \cdot 94 + 2 = 8836 - 282 + 2 = 8556$
 $f(95) = 95^2 - 3 \cdot 95 + 2 = 9025 - 285 + 2 = 8742$
 $f(96) = 96^2 - 3 \cdot 96 + 2 = 9216 - 288 + 2 = 8930$
 $f(97) = 97^2 - 3 \cdot 97 + 2 = 9409 - 291 + 2 = 9120$
 $f(98) = 98^2 - 3 \cdot 98 + 2 = 9604 - 294 + 2 = 9312$
 $f(99) = 99^2 - 3 \cdot 99 + 2 = 9801 - 297 + 2 = 9506$
 $f(100) = 100^2 - 3 \cdot 100 + 2 = 10000 - 300 + 2 = 9702$

