

PLOTS OF CLOSED FORMS

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1. INTRODUCTION

$$P(m, X, N) = \sum_{r=0}^m \sum_{k=1}^N \mathbf{A}_{m,r} k^r (X - k)^r$$
$$Q(m, X, N) = \sum_{r=0}^m \sum_{k=0}^{N-1} \mathbf{A}_{m,r} k^r (X - k)^r$$

$$P(m, N, N) = N^{2m+1}$$

$$Q(m, N, N) = N^{2m+1}$$

$$P(m, N + 1, N) = (N + 1)^{2m+1} - 1 \quad (\textit{verified})$$

$$Q(m, N - 1, N) = (N - 1)^{2m+1} + 1 \quad (\textit{verified})$$

1.1. Polynomials $P(1,X,N)$.

$$P(1, X, 0) = 0$$

$$P(1, X, 1) = 6X - 5$$

$$P(1, X, 2) = 18X - 28$$

$$P(1, X, 3) = 36X - 81$$

$$P(1, X, 4) = 60X - 176$$

$$P(1, X, 5) = 90X - 325$$

$$P(1, X, 6) = 126X - 540$$

$$P(1, X, 7) = 168X - 833$$

$$P(1, X, 8) = 216X - 1216$$

$$P(1, X, 9) = 270X - 1701$$

$$P(1, X, 10) = 330X - 2300$$

$$P(1, X, 11) = 396X - 3025$$

$$P(1, X, 12) = 468X - 3888$$

$$P(1, X, 13) = 546X - 4901$$

$$P(1, X, 14) = 630X - 6076$$

$$P(1, X, 15) = 720X - 7425$$

$$P(1, X, 16) = 816X - 8960$$

$$P(1, X, 17) = 918X - 10693$$

$$P(1, X, 18) = 1026X - 12636$$

$$P(1, X, 19) = 1140X - 14801$$

$$P(1, X, 20) = 1260X - 17200$$



Figure 1. Polynomials $P(1, X, N)$ for $N=1..4$

1.2. Polynomial $P(1, X, N)$ Table of values for $N = 6$.

1.3. Polynomials $Q(1,X,N)$.

$$Q(1, X, 0) = 0$$

$$Q(1, X, 1) = 1$$

$$Q(1, X, 2) = 6X - 4$$

$$Q(1, X, 3) = 18X - 27$$

$$Q(1, X, 4) = 36X - 80$$

$$Q(1, X, 5) = 60X - 175$$

$$Q(1, X, 6) = 90X - 324$$

$$Q(1, X, 7) = 126X - 539$$

$$Q(1, X, 8) = 168X - 832$$

$$Q(1, X, 9) = 216X - 1215$$

$$Q(1, X, 10) = 270X - 1700$$

$$Q(1, X, 11) = 330X - 2299$$

$$Q(1, X, 12) = 396X - 3024$$

$$Q(1, X, 13) = 468X - 3887$$

$$Q(1, X, 14) = 546X - 4900$$

$$Q(1, X, 15) = 630X - 6075$$

$$Q(1, X, 16) = 720X - 7424$$

$$Q(1, X, 17) = 816X - 8959$$

$$Q(1, X, 18) = 918X - 10692$$

$$Q(1, X, 19) = 1026X - 12635$$

$$Q(1, X, 20) = 1140X - 14800$$

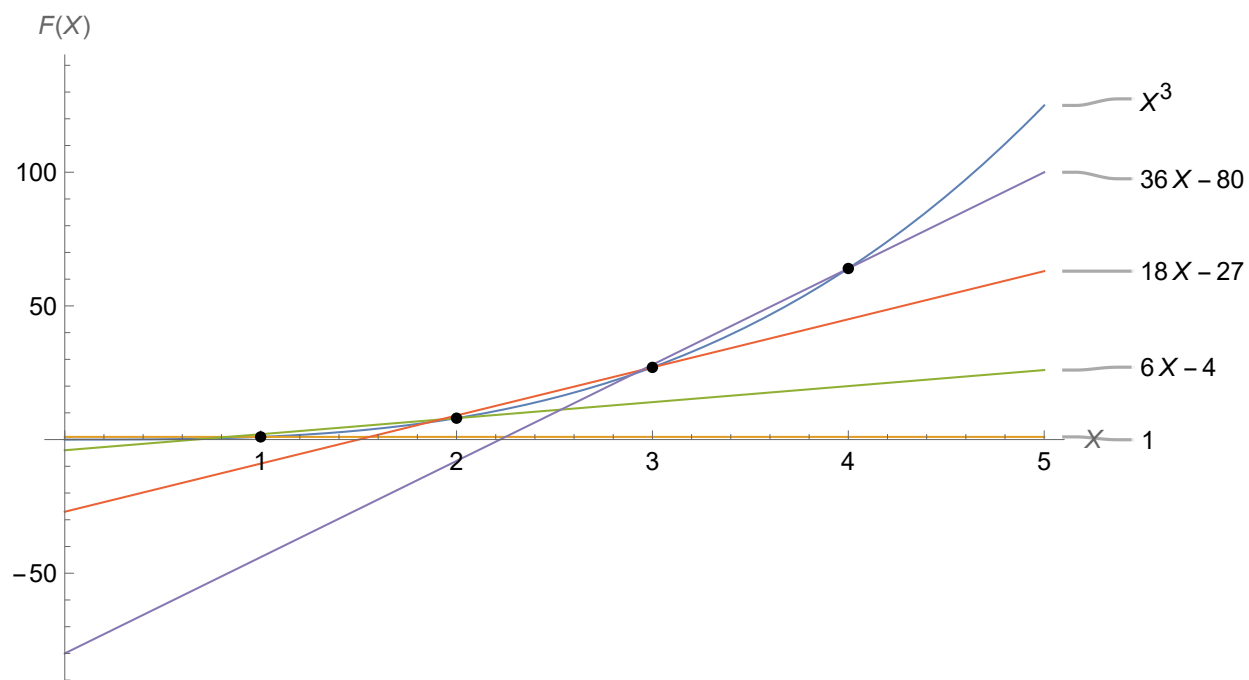


Figure 2. Polynomials $Q(1, n, k)$

1.4. Polynomial $Q(1, X, N)$ Table of values for $N = 6$.

1.5. Polynomials $P(2, X, N)$.

$$P(2, X, 0) = 0$$

$$P(2, X, 1) = 30X^2 - 60X + 31$$

$$P(2, X, 2) = 150X^2 - 540X + 512$$

$$P(2, X, 3) = 420X^2 - 2160X + 2943$$

$$P(2, X, 4) = 900X^2 - 6000X + 10624$$

$$P(2, X, 5) = 1650X^2 - 13500X + 29375$$

$$P(2, X, 6) = 2730X^2 - 26460X + 68256$$

$$P(2, X, 7) = 4200X^2 - 47040X + 140287$$

$$P(2, X, 8) = 6120X^2 - 77760X + 263168$$

$$P(2, X, 9) = 8550X^2 - 121500X + 459999$$

$$P(2, X, 10) = 11550X^2 - 181500X + 760000$$

$$P(2, X, 11) = 15180X^2 - 261360X + 1199231$$

$$P(2, X, 12) = 19500X^2 - 365040X + 1821312$$

$$P(2, X, 13) = 24570X^2 - 496860X + 2678143$$

$$P(2, X, 14) = 30450X^2 - 661500X + 3830624$$

$$P(2, X, 15) = 37200X^2 - 864000X + 5349375$$

$$P(2, X, 16) = 44880X^2 - 1109760X + 7315456$$

$$P(2, X, 17) = 53550X^2 - 1404540X + 9821087$$

$$P(2, X, 18) = 63270X^2 - 1754460X + 12970368$$

$$P(2, X, 19) = 74100X^2 - 2166000X + 16879999$$

$$P(2, X, 20) = 86100X^2 - 2646000X + 21680000$$

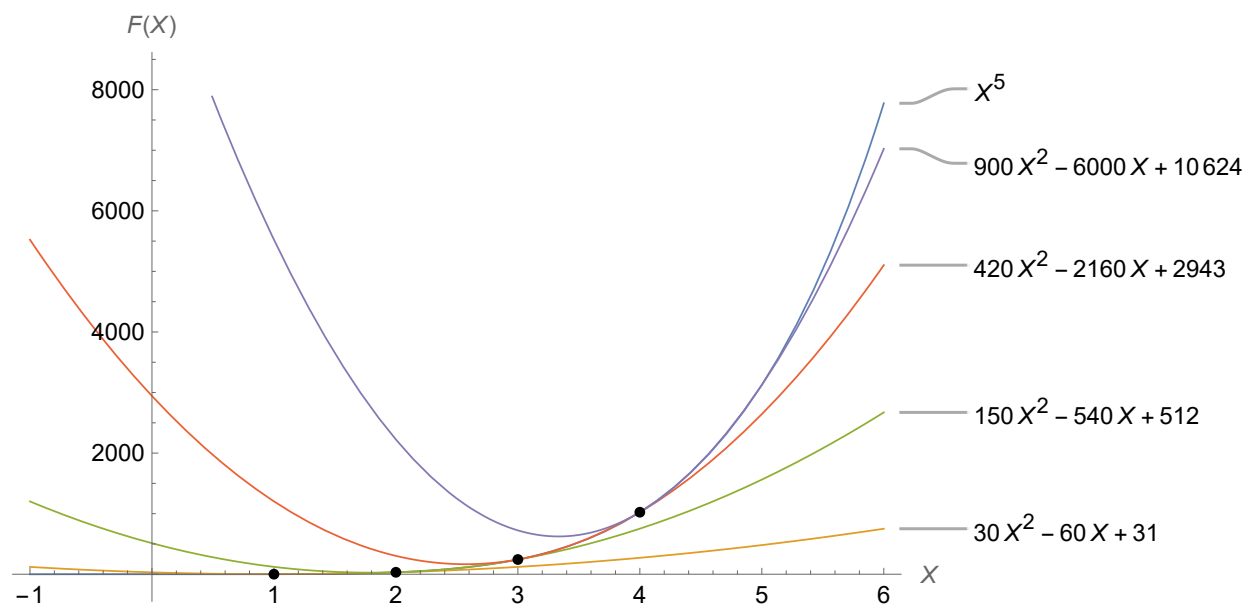


Figure 3. Polynomials $P(2, n, k)$

1.6. Polynomial $P(2, X, N)$ Table of values for $N = 4$.

1.7. Polynomials $Q(2, X, N)$.

$$Q(2, X, 0) = 0$$

$$Q(2, X, 1) = 1$$

$$Q(2, X, 2) = 30X^2 - 60X + 32$$

$$Q(2, X, 3) = 150X^2 - 540X + 513$$

$$Q(2, X, 4) = 420X^2 - 2160X + 2944$$

$$Q(2, X, 5) = 900X^2 - 6000X + 10625$$

$$Q(2, X, 6) = 1650X^2 - 13500X + 29376$$

$$Q(2, X, 7) = 2730X^2 - 26460X + 68257$$

$$Q(2, X, 8) = 4200X^2 - 47040X + 140288$$

$$Q(2, X, 9) = 6120X^2 - 77760X + 263169$$

$$Q(2, X, 10) = 8550X^2 - 121500X + 460000$$

$$Q(2, X, 11) = 11550X^2 - 181500X + 760001$$

$$Q(2, X, 12) = 15180X^2 - 261360X + 1199232$$

$$Q(2, X, 13) = 19500X^2 - 365040X + 1821313$$

$$Q(2, X, 14) = 24570X^2 - 496860X + 2678144$$

$$Q(2, X, 15) = 30450X^2 - 661500X + 3830625$$

$$Q(2, X, 16) = 37200X^2 - 864000X + 5349376$$

$$Q(2, X, 17) = 44880X^2 - 1109760X + 7315457$$

$$Q(2, X, 18) = 53550X^2 - 1404540X + 9821088$$

$$Q(2, X, 19) = 63270X^2 - 1754460X + 12970369$$

$$Q(2, X, 20) = 74100X^2 - 2166000X + 16880000$$

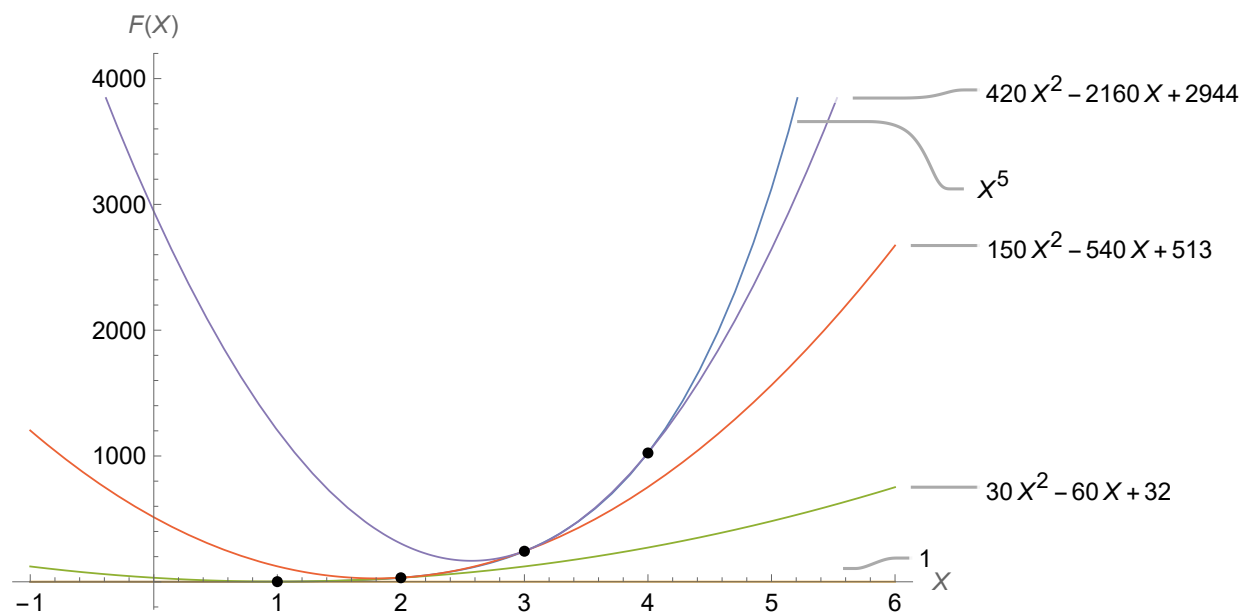


Figure 4. Polynomials $Q(2, n, k)$

1.8. Polynomial $Q(2, X, N)$ Table of values for $N = 4$.

1.9. **Polynomials $P(3,X,N)$.**

$$P(3, X, 0) = 0$$

$$P(3, X, 1) = 140X^3 - 420X^2 + 406X - 125$$

$$P(3, X, 2) = 1260X^3 - 7140X^2 + 13818X - 9028$$

$$P(3, X, 3) = 5040X^3 - 41160X^2 + 115836X - 110961$$

$$P(3, X, 4) = 14000X^3 - 148680X^2 + 545860X - 684176$$

$$P(3, X, 5) = 31500X^3 - 411180X^2 + 1858290X - 2871325$$

$$P(3, X, 6) = 61740X^3 - 955500X^2 + 5124126X - 9402660$$

$$P(3, X, 7) = 109760X^3 - 1963920X^2 + 12182968X - 25872833$$

$$P(3, X, 8) = 181440X^3 - 3684240X^2 + 25945416X - 62572096$$

$$P(3, X, 9) = 283500X^3 - 6439860X^2 + 50745870X - 136972701$$

$$P(3, X, 10) = 423500X^3 - 10639860X^2 + 92745730X - 276971300$$

$$P(3, X, 11) = 609840X^3 - 16789080X^2 + 160386996X - 524988145$$

$$P(3, X, 12) = 851760X^3 - 25498200X^2 + 264896268X - 943023888$$

$$P(3, X, 13) = 1159340X^3 - 37493820X^2 + 420839146X - 1618774781$$

$$P(3, X, 14) = 1543500X^3 - 53628540X^2 + 646725030X - 2672907076$$

$$P(3, X, 15) = 2016000X^3 - 74891040X^2 + 965662320X - 4267591425$$

$$P(3, X, 16) = 2589440X^3 - 102416160X^2 + 1406064016X - 6616398080$$

$$P(3, X, 17) = 3277260X^3 - 137494980X^2 + 2002403718X - 9995653693$$

$$P(3, X, 18) = 4093740X^3 - 181584900X^2 + 2796022026X - 14757360516$$

$$P(3, X, 19) = 5054000X^3 - 236319720X^2 + 3835983340X - 21343778801$$

$$P(3, X, 20) = 6174000X^3 - 303519720X^2 + 5179983060X - 30303773200$$

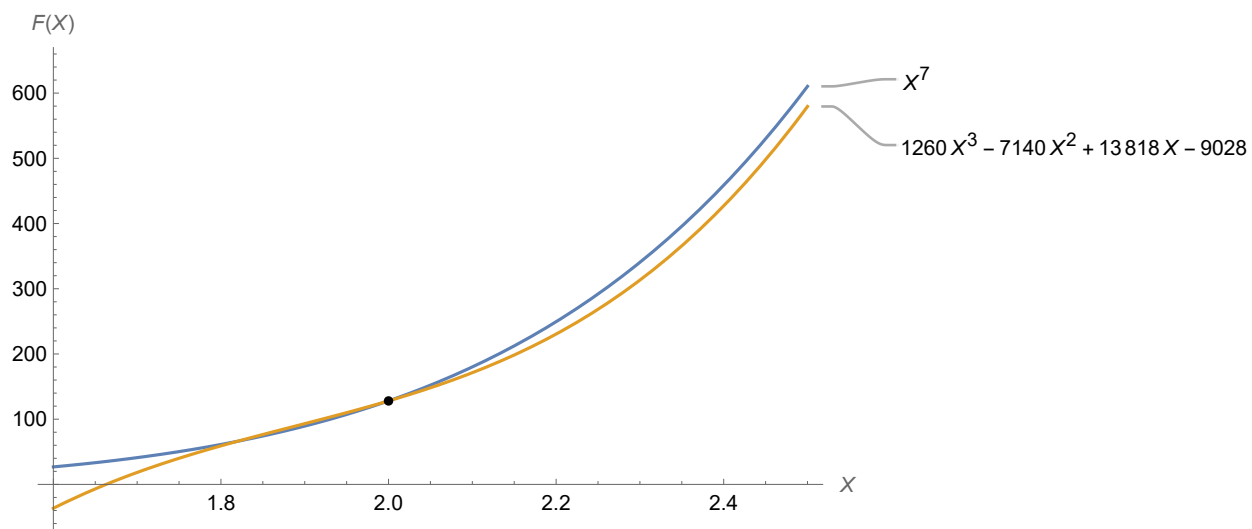


Figure 5. Polynomials $P(3, n, k)$

1.10. Polynomial $P(3, X, N)$ Table of values for $N = 3$.

1.11. **Polynomials $Q(3,X,N)$.**

$$Q(3, X, 0) = 0$$

$$Q(3, X, 1) = 1$$

$$Q(3, X, 2) = 140X^3 - 420X^2 + 406X - 124$$

$$Q(3, X, 3) = 1260X^3 - 7140X^2 + 13818X - 9027$$

$$Q(3, X, 4) = 5040X^3 - 41160X^2 + 115836X - 110960$$

$$Q(3, X, 5) = 14000X^3 - 148680X^2 + 545860X - 684175$$

$$Q(3, X, 6) = 31500X^3 - 411180X^2 + 1858290X - 2871324$$

$$Q(3, X, 7) = 61740X^3 - 955500X^2 + 5124126X - 9402659$$

$$Q(3, X, 8) = 109760X^3 - 1963920X^2 + 12182968X - 25872832$$

$$Q(3, X, 9) = 181440X^3 - 3684240X^2 + 25945416X - 62572095$$

$$Q(3, X, 10) = 283500X^3 - 6439860X^2 + 50745870X - 136972700$$

$$Q(3, X, 11) = 423500X^3 - 10639860X^2 + 92745730X - 276971299$$

$$Q(3, X, 12) = 609840X^3 - 16789080X^2 + 160386996X - 524988144$$

$$Q(3, X, 13) = 851760X^3 - 25498200X^2 + 264896268X - 943023887$$

$$Q(3, X, 14) = 1159340X^3 - 37493820X^2 + 420839146X - 1618774780$$

$$Q(3, X, 15) = 1543500X^3 - 53628540X^2 + 646725030X - 2672907075$$

$$Q(3, X, 16) = 2016000X^3 - 74891040X^2 + 965662320X - 4267591424$$

$$Q(3, X, 17) = 2589440X^3 - 102416160X^2 + 1406064016X - 6616398079$$

$$Q(3, X, 18) = 3277260X^3 - 137494980X^2 + 2002403718X - 9995653692$$

$$Q(3, X, 19) = 4093740X^3 - 181584900X^2 + 2796022026X - 14757360515$$

$$Q(3, X, 20) = 5054000X^3 - 236319720X^2 + 3835983340X - 21343778800$$

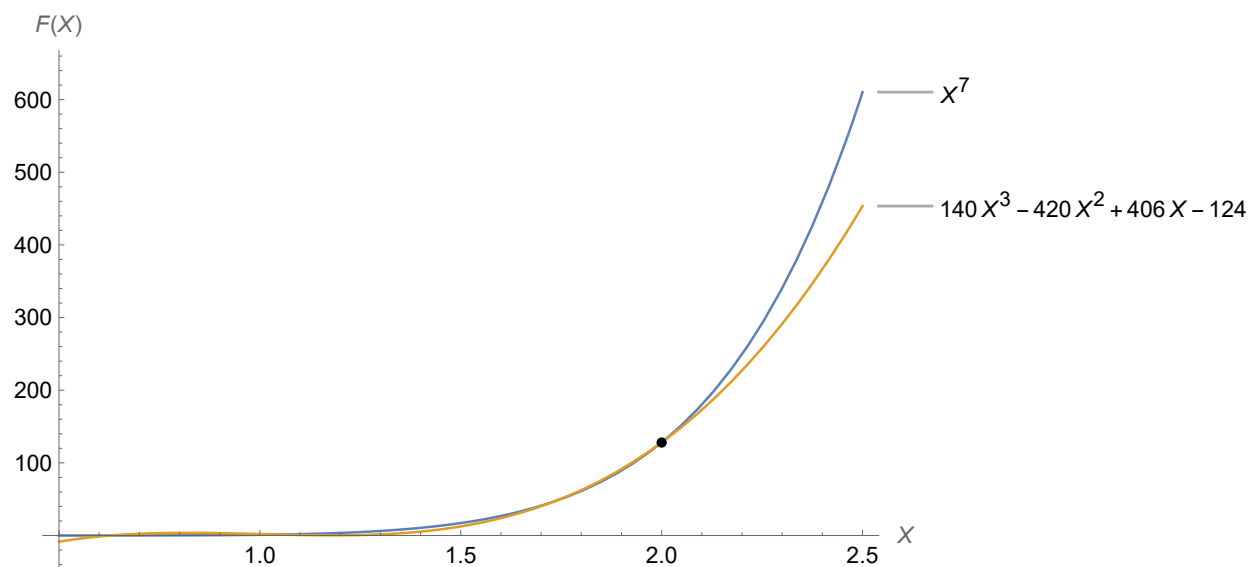


Figure 6. Polynomials $Q(3, n, k)$

1.12. Polynomial $Q(3, X, N)$ Table of values for $N = 3$.

Table 1. Comparison of X^3 , $P(1, X, 6) = 126X - 540$, Absolute, Relative, and Percentage Error

| X | X^3 | $126X - 540$ | ABS | Relative | % Error |
|----------|---------|--------------|------------|-----------------|----------------|
| 5.3 | 148.877 | 127.8 | 21.077 | 0.141573 | 14.1573 |
| 5.4 | 157.464 | 140.4 | 17.064 | 0.108368 | 10.8368 |
| 5.5 | 166.375 | 153.0 | 13.375 | 0.0803907 | 8.03907 |
| 5.6 | 175.616 | 165.6 | 10.016 | 0.0570335 | 5.70335 |
| 5.7 | 185.193 | 178.2 | 6.993 | 0.0377606 | 3.77606 |
| 5.8 | 195.112 | 190.8 | 4.312 | 0.0221001 | 2.21001 |
| 5.9 | 205.379 | 203.4 | 1.979 | 0.00963584 | 0.963584 |
| 6.0 | 216.0 | 216.0 | 0.0 | 0.0 | 0.0 |
| 6.1 | 226.981 | 228.6 | 1.619 | 0.00713276 | 0.713276 |
| 6.2 | 238.328 | 241.2 | 2.872 | 0.0120506 | 1.20506 |
| 6.3 | 250.047 | 253.8 | 3.753 | 0.0150092 | 1.50092 |
| 6.4 | 262.144 | 266.4 | 4.256 | 0.0162354 | 1.62354 |
| 6.5 | 274.625 | 279.0 | 4.375 | 0.0159308 | 1.59308 |
| 6.6 | 287.496 | 291.6 | 4.104 | 0.014275 | 1.4275 |
| 6.7 | 300.763 | 304.2 | 3.437 | 0.0114276 | 1.14276 |
| 6.8 | 314.432 | 316.8 | 2.368 | 0.00753104 | 0.753104 |
| 6.9 | 328.509 | 329.4 | 0.891 | 0.00271225 | 0.271225 |
| 7.0 | 343.0 | 342.0 | 1.0 | 0.00291545 | 0.291545 |
| 7.1 | 357.911 | 354.6 | 3.311 | 0.0092509 | 0.92509 |
| 7.2 | 373.248 | 367.2 | 6.048 | 0.0162037 | 1.62037 |
| 7.3 | 389.017 | 379.8 | 9.217 | 0.0236931 | 2.36931 |
| 7.4 | 405.224 | 392.4 | 12.824 | 0.0316467 | 3.16467 |
| 7.5 | 421.875 | 405.0 | 16.875 | 0.04 | 4.0 |
| 7.6 | 438.976 | 417.6 | 21.376 | 0.0486951 | 4.86951 |
| 7.7 | 456.533 | 430.2 | 26.333 | 0.0576804 | 5.76804 |
| 7.8 | 474.552 | 442.8 | 31.752 | 0.0669094 | 6.69094 |
| 7.9 | 493.029 | 455.4 | 37.629 | 0.0762408 | 7.62408 |

Table 2. Comparison of X^3 , $Q(1, X, 6) = 90X - 324$, Absolute, Relative, and Percentage Error

| X | X^3 | $90X - 324$ | ABS | Relative | % Error |
|----------|---------|-------------|------------|-----------------|----------------|
| 4.5 | 91.125 | 81.0 | 10.125 | 0.111111 | 11.1111 |
| 4.6 | 97.336 | 90.0 | 7.336 | 0.0753678 | 7.53678 |
| 4.7 | 103.823 | 99.0 | 4.823 | 0.0464541 | 4.64541 |
| 4.8 | 110.592 | 108.0 | 2.592 | 0.0234375 | 2.34375 |
| 4.9 | 117.649 | 117.0 | 0.649 | 0.00551641 | 0.551641 |
| 5.0 | 125.0 | 126.0 | 1.0 | 0.008 | 0.8 |
| 5.1 | 132.651 | 135.0 | 2.349 | 0.0177081 | 1.77081 |
| 5.2 | 140.608 | 144.0 | 3.392 | 0.0241238 | 2.41238 |
| 5.3 | 148.877 | 153.0 | 4.123 | 0.027694 | 2.7694 |
| 5.4 | 157.464 | 162.0 | 4.536 | 0.0288066 | 2.88066 |
| 5.5 | 166.375 | 171.0 | 4.625 | 0.0277986 | 2.77986 |
| 5.6 | 175.616 | 180.0 | 4.384 | 0.0249636 | 2.49636 |
| 5.7 | 185.193 | 189.0 | 3.807 | 0.0205569 | 2.05569 |
| 5.8 | 195.112 | 198.0 | 2.888 | 0.0148018 | 1.48018 |
| 5.9 | 205.379 | 207.0 | 1.621 | 0.00789273 | 0.789273 |
| 6.0 | 216.0 | 216.0 | 0.0 | 0.0 | 0.0 |
| 6.1 | 226.981 | 225.0 | 1.981 | 0.0087276 | 0.87276 |
| 6.2 | 238.328 | 234.0 | 4.328 | 0.0181598 | 1.81598 |
| 6.3 | 250.047 | 243.0 | 7.047 | 0.0281827 | 2.81827 |
| 6.4 | 262.144 | 252.0 | 10.144 | 0.0386963 | 3.86963 |
| 6.5 | 274.625 | 261.0 | 13.625 | 0.0496131 | 4.96131 |
| 6.6 | 287.496 | 270.0 | 17.496 | 0.0608565 | 6.08565 |
| 6.7 | 300.763 | 279.0 | 21.763 | 0.0723593 | 7.23593 |
| 6.8 | 314.432 | 288.0 | 26.432 | 0.0840627 | 8.40627 |
| 6.9 | 328.509 | 297.0 | 31.509 | 0.0959152 | 9.59152 |
| 7.0 | 343.0 | 306.0 | 37.0 | 0.107872 | 10.7872 |

Table 3. Comparison of X^5 , $P(2, X, 4) = 900X^2 - 6000X + 10624$, Absolute, Relative, and Percentage Error

| X | X^5 | $900X^2 - 6000X + 10624$ | ABS | Relative | % Error |
|----------|---------|--------------------------|------------|-----------------|----------------|
| 3.6 | 604.662 | 688.0 | 83.3382 | 0.137826 | 13.7826 |
| 3.7 | 693.44 | 745.0 | 51.5604 | 0.0743546 | 7.43546 |
| 3.8 | 792.352 | 820.0 | 27.6483 | 0.034894 | 3.4894 |
| 3.9 | 902.242 | 913.0 | 10.758 | 0.0119236 | 1.19236 |
| 4.0 | 1024.0 | 1024.0 | 0.0 | 0.0 | 0.0 |
| 4.1 | 1158.56 | 1153.0 | 5.56201 | 0.00480079 | 0.480079 |
| 4.2 | 1306.91 | 1300.0 | 6.91232 | 0.00528905 | 0.528905 |
| 4.3 | 1470.08 | 1465.0 | 5.08443 | 0.0034586 | 0.34586 |
| 4.4 | 1649.16 | 1648.0 | 1.16224 | 0.000704746 | 0.0704746 |
| 4.5 | 1845.28 | 1849.0 | 3.71875 | 0.00201528 | 0.201528 |
| 4.6 | 2059.63 | 2068.0 | 8.37024 | 0.00406395 | 0.406395 |
| 4.7 | 2293.45 | 2305.0 | 11.5499 | 0.00503605 | 0.503605 |
| 4.8 | 2548.04 | 2560.0 | 11.9603 | 0.00469393 | 0.469393 |
| 4.9 | 2824.75 | 2833.0 | 8.24751 | 0.00291973 | 0.291973 |
| 5.0 | 3125.0 | 3124.0 | 1.0 | 0.00032 | 0.032 |
| 5.1 | 3450.25 | 3433.0 | 17.2525 | 0.00500036 | 0.500036 |
| 5.2 | 3802.04 | 3760.0 | 42.0403 | 0.0110573 | 1.10573 |
| 5.3 | 4181.95 | 4105.0 | 76.9549 | 0.0184017 | 1.84017 |
| 5.4 | 4591.65 | 4468.0 | 123.65 | 0.0269294 | 2.69294 |
| 5.5 | 5032.84 | 4849.0 | 183.844 | 0.0365288 | 3.65288 |
| 5.6 | 5507.32 | 5248.0 | 259.318 | 0.047086 | 4.7086 |
| 5.7 | 6016.92 | 5665.0 | 351.921 | 0.0584885 | 5.84885 |
| 5.8 | 6563.57 | 6100.0 | 463.568 | 0.0706274 | 7.06274 |
| 5.9 | 7149.24 | 6553.0 | 596.243 | 0.0833995 | 8.33995 |
| 6.0 | 7776.0 | 7024.0 | 752.0 | 0.0967078 | 9.67078 |
| 6.1 | 8445.96 | 7513.0 | 932.963 | 0.110463 | 11.0463 |

Table 4. Comparison of X^5 , $Q(2, X, 4) = 420X^2 - 2160X + 2944$, Absolute, Relative, and Percentage Error

| X | X^5 | $420X^2 - 2160X + 2944$ | ABS | Relative | % Error |
|----------|---------|-------------------------|------------|-----------------|----------------|
| 2.7 | 143.489 | 173.8 | 30.3109 | 0.211242 | 21.1242 |
| 2.8 | 172.104 | 188.8 | 16.6963 | 0.0970131 | 9.70131 |
| 2.9 | 205.111 | 212.2 | 7.08851 | 0.0345593 | 3.45593 |
| 3.0 | 243.0 | 244.0 | 1.0 | 0.00411523 | 0.411523 |
| 3.1 | 286.292 | 284.2 | 2.09151 | 0.00730553 | 0.730553 |
| 3.2 | 335.544 | 332.8 | 2.74432 | 0.00817871 | 0.817871 |
| 3.3 | 391.354 | 389.8 | 1.55393 | 0.00397065 | 0.397065 |
| 3.4 | 454.354 | 455.2 | 0.84576 | 0.00186146 | 0.186146 |
| 3.5 | 525.219 | 529.0 | 3.78125 | 0.00719938 | 0.719938 |
| 3.6 | 604.662 | 611.2 | 6.53824 | 0.0108131 | 1.08131 |
| 3.7 | 693.44 | 701.8 | 8.36043 | 0.0120565 | 1.20565 |
| 3.8 | 792.352 | 800.8 | 8.44832 | 0.0106623 | 1.06623 |
| 3.9 | 902.242 | 908.2 | 5.95801 | 0.00660356 | 0.660356 |
| 4.0 | 1024.0 | 1024.0 | 0.0 | 0.0 | 0.0 |
| 4.1 | 1158.56 | 1148.2 | 10.362 | 0.00894385 | 0.894385 |
| 4.2 | 1306.91 | 1280.8 | 26.1123 | 0.0199802 | 1.99802 |
| 4.3 | 1470.08 | 1421.8 | 48.2844 | 0.0328447 | 3.28447 |
| 4.4 | 1649.16 | 1571.2 | 77.9622 | 0.0472738 | 4.72738 |
| 4.5 | 1845.28 | 1729.0 | 116.281 | 0.0630155 | 6.30155 |
| 4.6 | 2059.63 | 1895.2 | 164.43 | 0.0798346 | 7.98346 |
| 4.7 | 2293.45 | 2069.8 | 223.65 | 0.0975169 | 9.75169 |
| 4.8 | 2548.04 | 2252.8 | 295.24 | 0.115869 | 11.5869 |

Table 5. Comparison of X^7 , $P(3, X, 3) = 5040X^3 - 41160X^2 + 115836X - 110961$,
Absolute, Relative, and Percentage Error

| X | X^7 | $5040X^3 - 41160X^2 + 115836X - 110961$ | ABS | Relative | % Error |
|----------|---------|---|------------|-----------------|----------------|
| 2.7 | 1046.04 | 942.12 | 103.915 | 0.0993421 | 9.93421 |
| 2.8 | 1349.29 | 1323.48 | 25.8129 | 0.0191307 | 1.91307 |
| 2.9 | 1724.99 | 1728.36 | 3.37237 | 0.00195501 | 0.195501 |
| 3.0 | 2187.00 | 2187.00 | 0.0 | 0.0 | 0.0 |
| 3.1 | 2751.26 | 2729.64 | 21.6214 | 0.00785873 | 0.785873 |
| 3.2 | 3435.97 | 3386.52 | 49.4538 | 0.014393 | 1.4393 |
| 3.3 | 4261.84 | 4187.88 | 73.9643 | 0.017355 | 1.7355 |
| 3.4 | 5252.34 | 5163.96 | 88.375 | 0.0168259 | 1.68259 |
| 3.5 | 6433.93 | 6345.00 | 88.9297 | 0.013822 | 1.3822 |
| 3.6 | 7836.42 | 7761.24 | 75.1764 | 0.00959321 | 0.959321 |
| 3.7 | 9493.19 | 9442.92 | 50.2677 | 0.00529514 | 0.529514 |
| 3.8 | 11441.6 | 11420.3 | 21.2783 | 0.00185973 | 0.185973 |
| 3.9 | 13723.1 | 13723.6 | 0.459332 | 0.0000334715 | 0.00334715 |
| 4.0 | 16384.0 | 16383.0 | 1.0 | 0.0000610352 | 0.00610352 |
| 4.1 | 19475.4 | 19428.8 | 46.5874 | 0.00239211 | 0.239211 |
| 4.2 | 23053.9 | 22891.3 | 162.613 | 0.0070536 | 0.70536 |
| 4.3 | 27181.9 | 26800.7 | 381.181 | 0.0140234 | 1.40234 |
| 4.4 | 31927.8 | 31187.2 | 740.621 | 0.0231968 | 2.31968 |
| 4.5 | 37366.9 | 36081.0 | 1285.95 | 0.034414 | 3.4414 |
| 4.6 | 43581.8 | 41512.4 | 2069.33 | 0.0474815 | 4.74815 |
| 4.7 | 50662.3 | 47511.7 | 3150.59 | 0.0621881 | 6.21881 |
| 4.8 | 58706.8 | 54109.1 | 4597.75 | 0.0783172 | 7.83172 |
| 4.9 | 67822.3 | 61334.8 | 6487.55 | 0.0956551 | 9.56551 |
| 5.0 | 78125.0 | 69219.0 | 8906.0 | 0.113997 | 11.3997 |
| 5.1 | 89741.1 | 77792.0 | 11949.0 | 0.13315 | 13.315 |

Table 6. Comparison of X^7 , $Q(3, X, 3) = 1260X^3 - 7140X^2 + 13818X - 9027$, Absolute, Relative, and Percentage Error

| X | X^7 | $1260X^3 - 7140X^2 + 13818X - 9027$ | ABS | Relative | % Error |
|----------|---------|-------------------------------------|------------|-----------------|----------------|
| 1.7 | 41.0339 | 19.38 | 21.6539 | 0.527707 | 52.7707 |
| 1.8 | 61.222 | 60.12 | 1.102 | 0.0180001 | 1.80001 |
| 1.9 | 89.3872 | 94.14 | 4.75283 | 0.0531712 | 5.31712 |
| 2.0 | 128.0 | 129.0 | 1.0 | 0.0078125 | 0.78125 |
| 2.1 | 180.109 | 172.26 | 7.84885 | 0.0435784 | 4.35784 |
| 2.2 | 249.436 | 231.48 | 17.9558 | 0.0719856 | 7.19856 |
| 2.3 | 340.483 | 314.22 | 26.2625 | 0.0771333 | 7.71333 |
| 2.4 | 458.647 | 428.04 | 30.6071 | 0.0667335 | 6.67335 |
| 2.5 | 610.352 | 580.5 | 29.8516 | 0.0489088 | 4.89088 |
| 2.6 | 803.181 | 779.16 | 24.021 | 0.0299074 | 2.99074 |
| 2.7 | 1046.04 | 1031.58 | 14.4553 | 0.0138192 | 1.38192 |
| 2.8 | 1349.29 | 1345.32 | 3.97285 | 0.0029444 | 0.29444 |
| 2.9 | 1724.99 | 1727.94 | 2.95237 | 0.00171153 | 0.171153 |
| 3.0 | 2187.0 | 2187.0 | 0.0 | 0.0 | 0.0 |
| 3.1 | 2751.26 | 2730.06 | 21.2014 | 0.00770607 | 0.770607 |
| 3.2 | 3435.97 | 3364.68 | 71.2938 | 0.0207492 | 2.07492 |
| 3.3 | 4261.84 | 4098.42 | 163.424 | 0.0383459 | 3.83459 |
| 3.4 | 5252.34 | 4938.84 | 313.495 | 0.0596868 | 5.96868 |
| 3.5 | 6433.93 | 5893.5 | 540.43 | 0.0839968 | 8.39968 |
| 3.6 | 7836.42 | 6969.96 | 866.456 | 0.110568 | 11.0568 |
| 3.7 | 9493.19 | 8175.78 | 1317.41 | 0.138774 | 13.8774 |