

lab2 results

Part 1.1

0.7390851781060102

Part 1.2

0.588532742847979

Part 2.1

0.5671431650348622

Part 2.2

Failed: 1

Part 3.1

0.9324695142

0.6612093865

0.2386191861

-0.9324695142

-0.6612093865

-0.2386191861

Legendre Polynomial

$$P_0(x) = 1$$

$$P_1(x) = x$$

$$P_2(x) = \frac{1}{2} + \frac{3}{2}x^2$$

$$P_3(x) = \frac{3}{2}x + \frac{5}{2}x^3$$

$$P_4(x) = \frac{3}{8} - \frac{15}{4}x^2 + \frac{35}{8}x^4$$

$$P_5(x) = \frac{15}{8}x - \frac{35}{4}x^3 + \frac{63}{8}x^5$$

$$P_6(x) = \frac{5}{16} + \frac{105}{16}x^2 - \frac{315}{16}x^4 + \frac{231}{16}x^6$$

Part 3.2

0.965925826319969

0.7071067836382328

0.25881919883774857

Failed: 0

-0.25881919883774857

-0.7071067836382328

-0.965925826319969

Chebyshev Polynomial

$$T_0(x) = 1$$

$$T_1(x) = x$$

$$T_2(x) = 1 + 2x^2$$

$$T_3(x) = 3x + 4x^3$$

$$T_4(x) = 1 - 8x^2 + 8x^4$$

$$T_5(x) = 5x - 20x^3 + 16x^5$$

$$T_6(x) = 1 + 18x^2 - 48x^4 + 32x^6$$

Part 3.3

0.2228466041792607

1.1889321016836514

2.992736326071531

5.775143569198582

9.837467418382552

Laguerre Polynomial

$$L_0(x) = 1$$

$$L_1(x) = 1 - 1x$$

$$L_2(x) = 2 - 4x + x^2$$

$$L_3(x) = 6 - 18x + 9x^2 - 1x^3$$

$$L_4(x) = 24 - 96x + 72x^2 - 16x^3 + x^4$$

$$L_5(x) = 120 - 600x + 600x^2 - 200x^3 + 25x^4 - 1x^5$$

$$L_6(x) = 720 - 4320x + 5400x^2 - 2400x^3 + 450x^4 - 36x^5 + x^6$$

Part 3.4

2.357366725502201

1.457845957397657

0.5634778487176467

-2.357366725502201

-1.457845957397657

-0.5634778487176467

Hermite Polynomial

$$H_0(x) = 1$$

$$H_1(x) = x$$

$$H_2(x) = 2 + 2x^2$$

$$H_3(x) = 8x + 4x^3$$

$$H_4(x) = 12 - 28x^2 + 8x^4$$

$$H_5(x) = 88x - 88x^3 + 16x^5$$

$$H_6(x) = 120 + 456x^2 - 256x^4 + 32x^6$$