Power generated by a windmill:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Windspeed (mph)** | 14 | 22 | 30 | 38 | 46 |
| **Electrical Power (W)** | 320 | 490 | 540 | 500 | 480 |

Determine the fourth order Lagrange polynomial that passes through the points.

What is the power for a windspeed of 26mph?

Lagrange Polynomial:

Newton’s Polynomial

a0 = y1 = 320

a1 = f[x2, x1] = (y2 - y1) / (x2 - x1) = 21.25

a2 = f[x3, x2, x1] = (f[x3, x2] - f[x2, x1]) / (x3 - x1) = ((y3 - y2) / (x3 - x2) - 21.25) / (x3 - x1) = -15 / 16

a3 = f[x4, x3, x2, x1] = (f[x4, x3, x2] - f[x3, x2, x1]) / (x4 - x1) = ((-11.25/16) - (-15/16)) / 24 = 0.009765625