

Here is some polynomial equations I have been plugging into Mathematica. This is just rough data. If there is anything significant here, I will explain it in a future post.

The problem in finding the directrix (if we are trying to fit the values of "x" and "y" on a parabola) is that these right triangles are taken from the focus and not the vertex.

This may explain why the points are not equally spaced from the points that they are supposed to fall on the parabola. However, I have to confirm this.

Review this data for now and stay posted to the math section on www.constructorscorner.com

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Expand[(5 - x)^4]
625 - 500 x + 150 x^2 - 20 x^3 + x^4
25 * (625 - 500 x + 150 x^2 - 20 x^3 + x^4)
25 (625 - 500 x + 150 x^2 - 20 x^3 + x^4)
eqn = 25 (625 - 500 x + 150 x^2 - 20 x^3 + x^4) - (x^2) - (x^2 * ((625 - 500 x + 150 x^2 - 20 x^3 + x^4)))
-x^2 + 25 (625 - 500 x + 150 x^2 - 20 x^3 + x^4) - x^2 (625 - 500 x + 150 x^2 - 20 x^3 + x^4)
Expand[-x^2 + 25 (625 - 500 x + 150 x^2 - 20 x^3 + x^4) - x^2 (625 - 500 x + 150 x^2 - 20 x^3 + x^4)]
15 625 - 12 500 x + 3124 x^2 - 125 x^4 + 20 x^5 - x^6
p = 15 625 - 12 500 x + 3124 x^2 - 125 x^4 + 20 x^5 - x^6
NSolve[p, x]

625 - 500 x + 150 x^2 - 20 x^3 + x^4

625 - 500 x + 150 x^2 - 20 x^3 + x^4

25 (625 - 500 x + 150 x^2 - 20 x^3 + x^4)

25 (625 - 500 x + 150 x^2 - 20 x^3 + x^4)

-x^2 + 25 (625 - 500 x + 150 x^2 - 20 x^3 + x^4) - x^2 (625 - 500 x + 150 x^2 - 20 x^3 + x^4)

-x^2 + 25 (625 - 500 x + 150 x^2 - 20 x^3 + x^4) - x^2 (625 - 500 x + 150 x^2 - 20 x^3 + x^4)

15 625 - 12 500 x + 3124 x^2 - 125 x^4 + 20 x^5 - x^6

15 625 - 12 500 x + 3124 x^2 - 125 x^4 + 20 x^5 - x^6

15 625 - 12 500 x + 3124 x^2 - 125 x^4 + 20 x^5 - x^6

{{x -> -4.99975}, {x -> 3.88794}, {x -> 4.55644 - 1.09288 i},
{x -> 4.55644 + 1.09288 i}, {x -> 5.99946 - 0.785566 i}, {x -> 5.99946 + 0.785566 i}}

(5^2) - (3.88794^2)
9.88392

```

Sq $\sqrt{9.8839225564}$

3.14387 Sq

Expand[(3 - x)^4]

81 - 108 x + 54 x^2 - 12 x^3 + x^4

Expand[(-x^2) + (3^2) * (81 - 108 x + 54 x^2 - 12 x^3 + x^4) - ((x^2) * (81 - 108 x + 54 x^2 - 12 x^3 + x^4))]

81 - 108 x + 54 x^2 - 12 x^3 + x^4

81 - 108 x + 54 x^2 - 12 x^3 + x^4

729 - 972 x + 404 x^2 - 45 x^4 + 12 x^5 - x^6

p = 729 - 972 x + 404 x^2 - 45 x^4 + 12 x^5 - x^6

729 - 972 x + 404 x^2 - 45 x^4 + 12 x^5 - x^6

NSolve[p, x]

{x → -2.99884}, {x → 2.03789}, {x → 2.5647 - 0.964981 i},

{x → 2.5647 + 0.964981 i}, {x → 3.91578 - 0.74352 i}, {x → 3.91578 + 0.74352 i}

$\sqrt{9 - 2.03789^2}$

2.20159

Expand[(2 - x)^4]

16 - 32 x + 24 x^2 - 8 x^3 + x^4

Expand[(-x^2) + 4(16 - 32 x + 24 x^2 - 8 x^3 + x^4) - (x^2) * (16 - 32 x + 24 x^2 - 8 x^3 + x^4)]

64 - 128 x + 79 x^2 - 20 x^4 + 8 x^5 - x^6

Expand[(88 - x)^4]

59 969 536 - 2 725 888 x + 46 464 x^2 - 352 x^3 + x^4

Expand[(-x^2) + 7744 * (59 969 536 - 2 725 888 x + 46 464 x^2 - 352 x^3 + x^4) - (x^2) * (59 969 536 - 2 725 888 x + 46 464 x^2 - 352 x^3 + x^4)]

464 404 086 784 - 21 109 276 672 x + 299 847 679 x^2 - 38 720 x^4 + 352 x^5 - x^6

```

Expand[(7 - x)^4]
2401 - 1372 x + 294 x^2 - 28 x^3 + x^4
Expand[
  (-x^2) + (7^2) * (2401 - 1372 x + 294 x^2 - 28 x^3 + x^4) - (x^2) * (2401 - 1372 x + 294 x^2 - 28 x^3 + x^4) ]
117 649 - 67 228 x + 12 004 x^2 - 245 x^4 + 28 x^5 - x^6
p = 117 649 - 67 228 x + 12 004 x^2 - 245 x^4 + 28 x^5 - x^6
NSolve[p, x]

2401 - 1372 x + 294 x^2 - 28 x^3 + x^4

2401 - 1372 x + 294 x^2 - 28 x^3 + x^4

117 649 - 67 228 x + 12 004 x^2 - 245 x^4 + 28 x^5 - x^6

117 649 - 67 228 x + 12 004 x^2 - 245 x^4 + 28 x^5 - x^6

117 649 - 67 228 x + 12 004 x^2 - 245 x^4 + 28 x^5 - x^6

{{x -> -6.99991}, {x -> 5.78761}, {x -> 6.54432 - 1.1812 i},
 {x -> 6.54432 + 1.1812 i}, {x -> 8.06183 - 0.820717 i}, {x -> 8.06183 + 0.820717 i}}

 $\sqrt{49 - 5.787611359980842^2}$ 
3.93746

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