4. Find each component of the polynomial function. Sketch the function.

$x^2 - 6x + 7$

$f(x) = x^4 - 10x^3 + 35x^2 - 52x + 28$

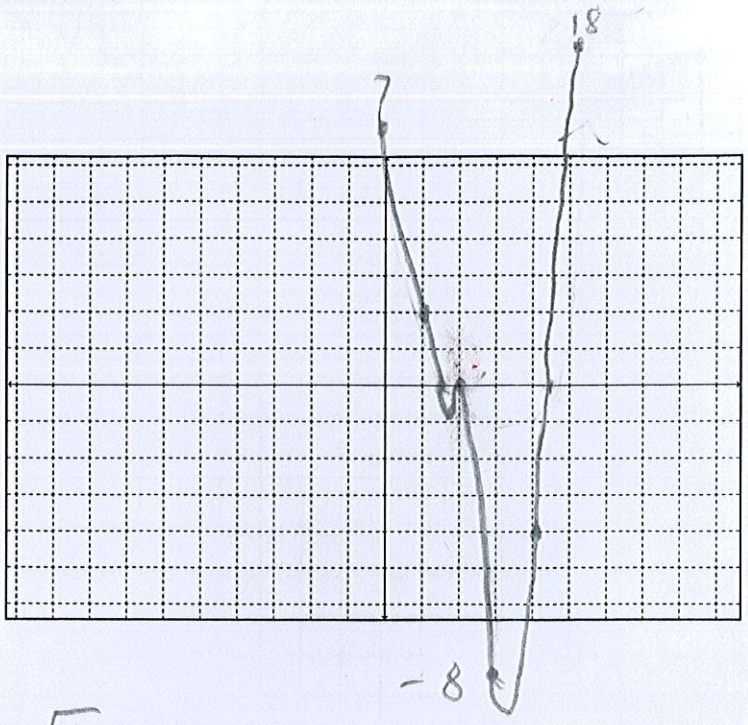
Degree: 4

End Behavior: ∞, ∞

Descartes: 4, 2, 0 positive
0 negative
+ 2 0 imaginary

Rational Root Thm:
$\pm 28 \pm 1 \pm 14 \pm 2 \pm 7 \pm 4$

Zeros:
2 2 $3+\sqrt{2}$ $3-\sqrt{2}$



6. Find each component of the polynomial function. Sketch the function.

$f(x) = x^4 - 3x^3 - 8x^2 + 16x + 24$

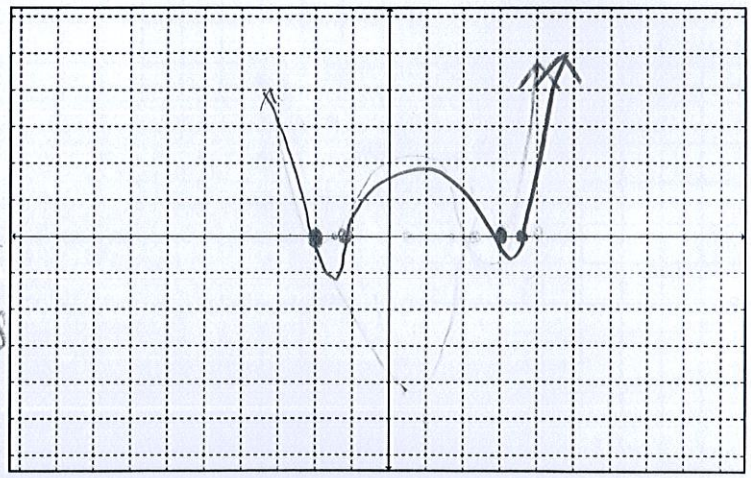
Degree: 4

End Behavior: high to high

Descartes:
2 or 0 poss positives
2 or 0 poss negatives

Rational Root Thm:
P: $\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 8, \pm 12, \pm 24$
q: ± 1
P/q: $\frac{\pm 1}{1}, \frac{\pm 2}{1}, \frac{\pm 3}{1}, \frac{\pm 4}{1}, \frac{\pm 6}{1}, \frac{\pm 8}{1}, \frac{\pm 12}{1}, \frac{\pm 24}{1}$

Zeros:
$x = 1 \pm \sqrt{5}$ $x = -2$ $x = 3$



$1 + \sqrt{5}$
$1 - \sqrt{5}$
-2

8. Find each component of the polynomial function. Sketch the function.

$f(x) = x^4 + 6x^3 - 16x^2 - 110x - 25$

Degree: 4 - quartic

End Behavior: high - high

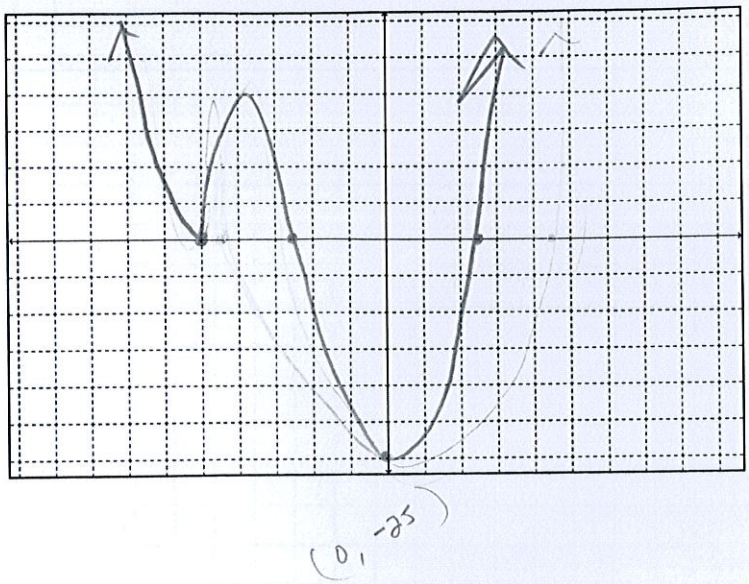
Descartes:

P	N	I
1	1	2
1	3	0

Rational Root Thm:

$\pm 1, \pm 5, \pm 25$

Zeros: $x = (-5)$ mult. of 2, $2 \pm \sqrt{3}$



7. Find each component of the polynomial function. Sketch the function.

$f(-x) = x^4 + 10x^3 + 32x^2 + 30x - 9$

$f(x) = x^4 - 10x^3 + 32x^2 - 30x - 9$

Degree: 4

End Behavior: high to high

Descartes: 3 or 1 positive

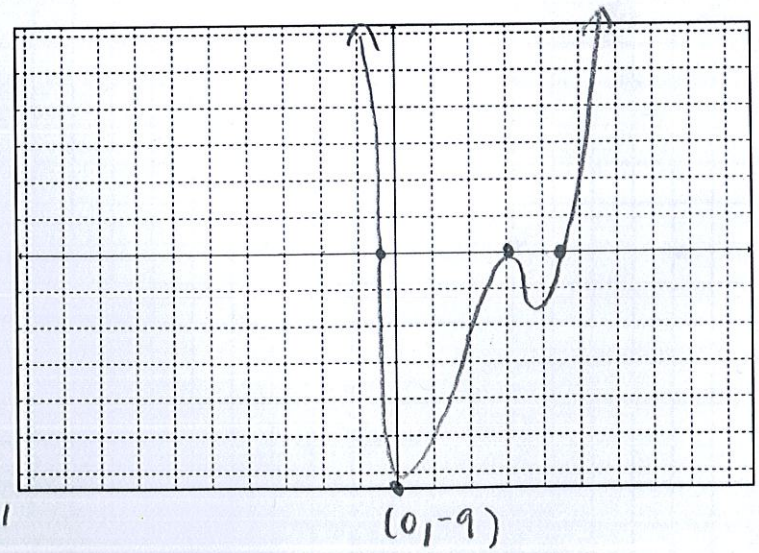
1 ~~or 2~~ negatives

P	N	I
3	1	
1	1	

Rational Root Thm:

$p = -9$ $p/q = \pm 1/1, \pm 3/1, \pm 9/1$

$q = 1$

Zeros: $x = \pm 2\sqrt{5}$

$x = 3$ mult of 2