

Name: KEY Date: _____ Period: _____

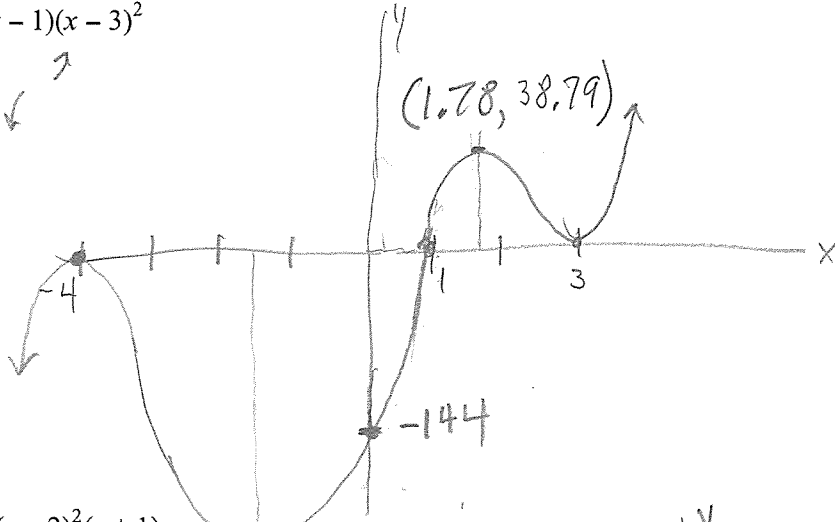
Advanced Algebra II Honors: Sketching Higher Degree Polynomials

Draw a sketch of the polynomials. Include the x and y intercepts and the correct end behavior.

1. $f(x) = (x+4)^2(x-1)(x-3)^2$

degree = 5 ↘ ↗

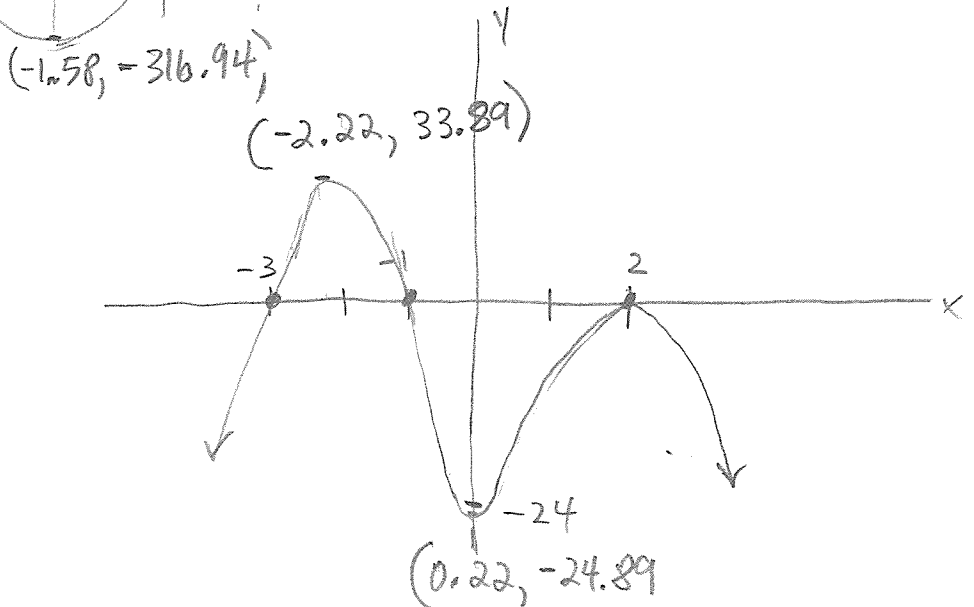
y-int: $f(0) = 4^2(-1)(-3)^2 = -144$



2. $f(x) = -2(x+3)(x-2)^2(x+1)$

deg = 4 ↘ ↘

y-int: $f(0) = -2(3)(4)(1) = -24$
 (0, -24)

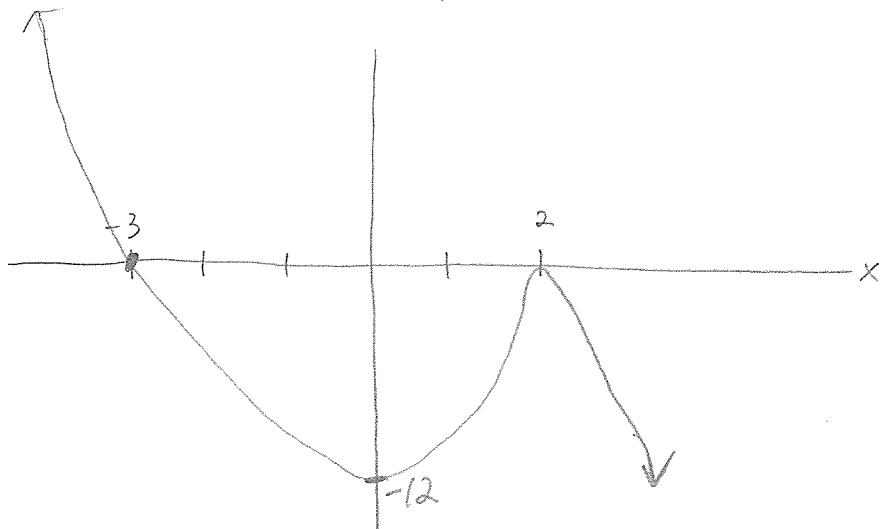


3. $f(x) = -(x+3)(x-2)^2$

deg = 3

LC = -

y-int: $f(0) = -(3)(4) = -12$



4. $f(x) = x^4 + 6x^3 + 9x^2 - 4x - 12$

$f(1) = 0$

$$\begin{array}{r|rrrrr} 1 & 1 & 6 & 9 & -4 & -12 \\ & & 1 & 7 & 16 & 12 \\ \hline & 1 & 7 & 16 & 12 & 0 \end{array}$$

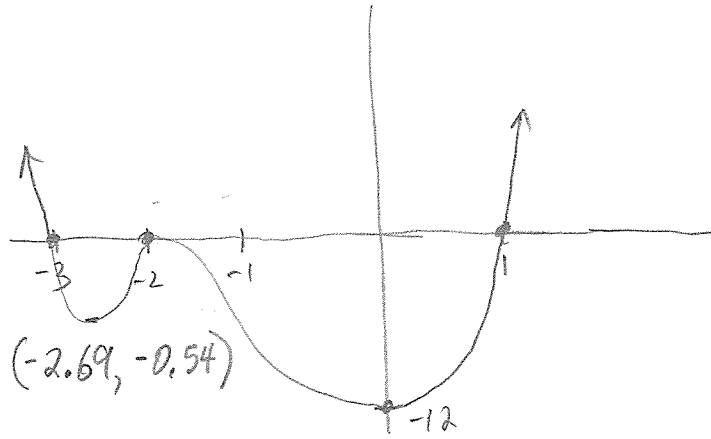
$x^3 + 7x^2 + 16x + 12$

$$\begin{array}{r|rrrrr} -3 & 1 & 7 & 16 & 12 \\ & & -3 & -12 & 72 \\ \hline & 1 & 4 & 4 & 0 \end{array}$$

$x^2 + 4x + 4$

$(x-1)(x+2)^2(x+3) = f(x)$

$y\text{-int} = -12$



5. $f(x) = -2x^3 - x^2 + 14x - 3$

$f(-3) = 0$

$$\begin{array}{r|rrrrr} -3 & -2 & -1 & 14 & -3 \\ & & 6 & -15 & 3 \\ \hline & -2 & 5 & -1 & 0 \end{array}$$

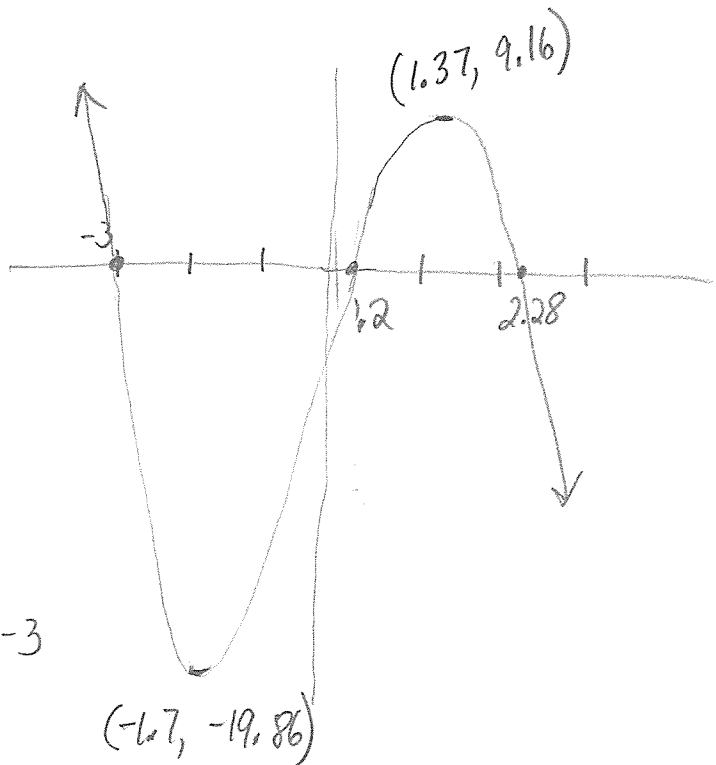
$-2x^2 + 5x - 1$

$$x = \frac{-5 \pm \sqrt{25 - 4(-2)(-1)}}{2(-2)}$$

$$= \frac{-5 \pm \sqrt{17}}{-4}$$

\swarrow 0.219 \searrow 2.28

$y\text{-int} = -3$



$(x+3)$