Odd Polynomials

Positive Leading Coefficient:

Moves from the third quadrant
to the first quadrant.
Like a line with a Positive slope

Negative Leading Coefficient:

Moves from the second quadrant
to the fourth quadrant.
Like a line with a Negative slope

Even Polynomials

Positive Leading Coefficient:

Moves from the second quadrant
to the first quadrant.
Like a parabola with a>0

Negative Leading Coefficient:

Moves from the third quadrant
to the fourth quadrant.
Like a parabola with a<0

END BEHAVIOR

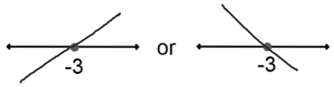
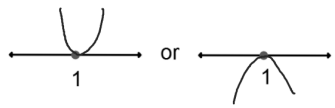
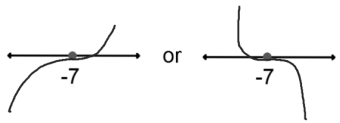
EVEN Functions:

Positive Leading Coefficient:	Negative Leading Coefficient:
(↖ , ↗)	(↙ , ↘)

ODD Functions:

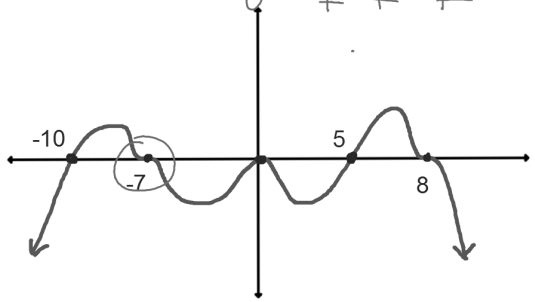
Positive Leading Coefficient:	Negative Leading Coefficient:
(↙ , ↗)	(↖ , ↘)

Shapes of Zeros (graphs at x-intercepts)

	Factor	Zero	Possible Shape
Single Zeros:	(x+3)	-3	
Double Zeros:	$(x - 1)^2$	+1	
Triple Zeros:	$(x + 7)^3$	-7	

Write the equation of this Polynomial:

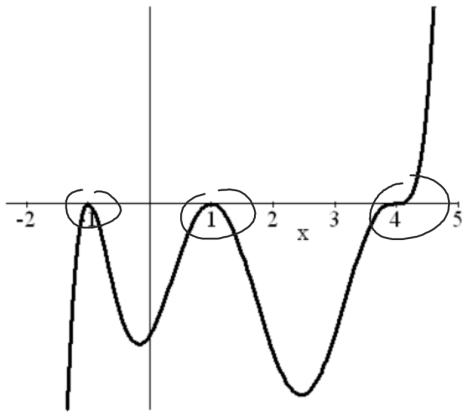
EVEN ✓
NEG



$y = -x^2(x+10)(x+7)^3(x-5)(x-8)^3$
$+ \quad + \quad + \quad - \quad + \quad +$

Write a possible equation for the function shown in this graph.

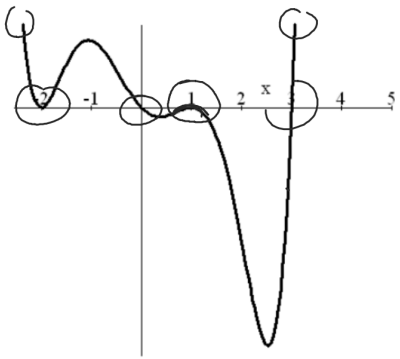
POS ✓
ODD ✓



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

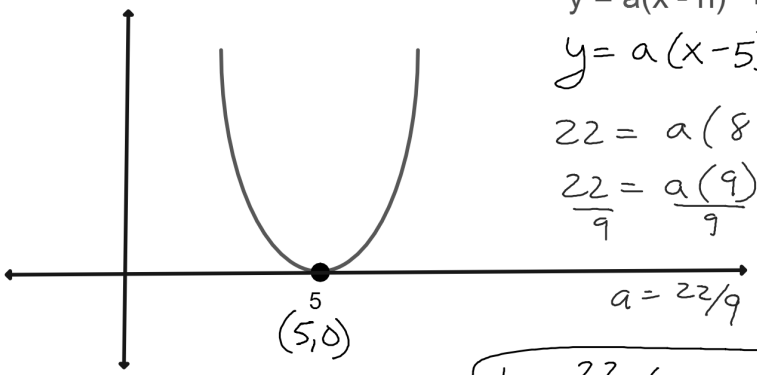
Write a possible equation for the function shown in this graph.

EVEN ✓
POS ✓



$y = aX\ (x+2)^2(x-1)^2(x-3)$

Write the equation of this parabola if it also passes through the point (8, 22).



$y = a(x - h)^2 + k$

$y = a(x-5)^2$

$22 = a(8-5)^2$

$\frac{22}{9} = \frac{a(9)}{9}$

$a = 22/9$

$y = \frac{22}{9}(x-5)^2$

Vertex Form of a Quadratic: $y = a(x - h)^2 + k$

Like Quadratics (which by the way is a Polynomial)

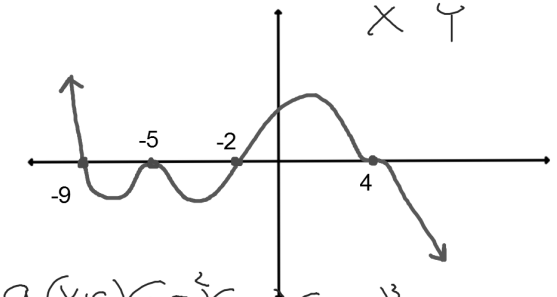
Polynomial equations also have an **a**.

EQ of a polynomial in factored form:

$f(x) = a(x - h)^n(x - j)^m(x - k)^p$.....

How do you find a? You need one more piece of information
- any point on the graph other than an x-intercept

Write the equation of this Polynomial with the correct value of a given the polynomial passes through the point (-3, -57624)



$y = a(x+9)(x+5)^2(x+2)(x-4)^3$

$-57624 = a(6)(4)(-1)(-343)$

$\frac{-57624}{8232} = \frac{8232a}{8232}$

$a = -7$

$y = -7(x+9)(x+5)^2(x+2)(x-4)^3$