| Even Power Functions	Odd Power Functions	Transformations of Quadratic Functions	Transformations of Quadratic Functions

Even Power Functions
 	
Example: _____
Possible Shapes:
 	
Possible End Behaviors:
 	
1. As x→∞, y→_____.
 	
   As x→ - ∞, y→_____.
 	
2. As x→∞, y→_____.
 	
   As x→ - ∞, y→_____.
	Odd Power Functions
	
	Example: _____
	Possible Shapes:
	
	Possible End Behaviors:
	
	1. As x→∞, y→_____.
	
	   As x→ - ∞, y→_____.
	
	2. As x→∞, y→_____.
	
	   As x→ - ∞, y→_____.
		Transformations of Quadratic Functions
		f(x) is the original function
		g(x) is the new function
		
		$$g(x)=Af(Bx-C)+D$$
		
		C: _____
		
		B: _____
		
		A: _____
		
		_____
		
		D: _____
		Example: Write out how f(x) has been transformed to get g(x). Then, graph g(x) on the same graph as f(x).
		$$g(x) = -2f(x + 1) + 2$$
		
		f(x) was _____
			Transformations of Quadratic Functions
			Example: Write the transformational function notation given the description.
			
			f(x) has been horizontally shifted 7 units right, reflected horizontally, vertically compressed by ½, and vertically shifted down 2 units.

Even Symmetry A graph that is symmetric about the _____. Graphical Example: Verify whether the function is even. $f(x)=2x^4 - 3x^2 + 6$	**Odd Symmetry** A graph that is symmetric about the _____. Graphical Example: Verify whether the function is even. $f(x)=5x^3 - 7x$	_____ _____ _____ to get g(x). 	**X-Intercepts** Fundamental Theorem of Algebra: "Any polynomial function of degree ___ must have exactly ___ complex or real _____. If a 4th degree function has 2 real x-intercepts, how many complex x-intercepts would it have? _____ How many real x-intercepts could a 5th degree function have? How many real x-intercepts could an 8th degree function have?
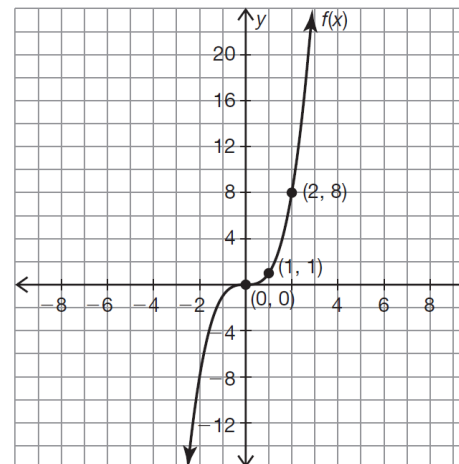
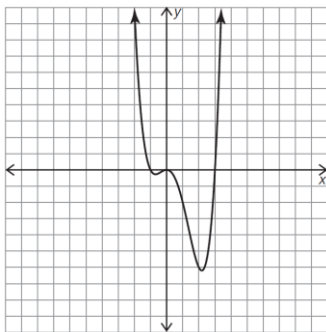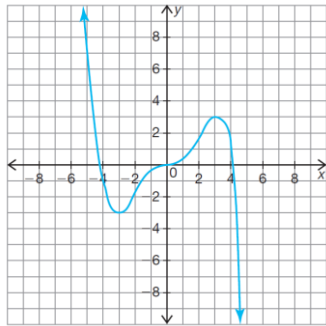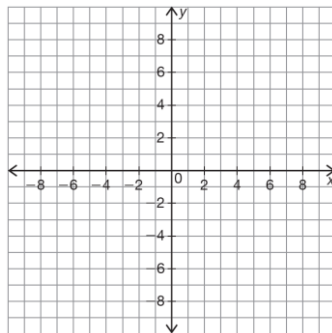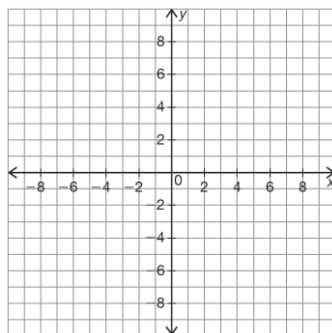| Extrema	Multiplicity
Extrema Absolute Maximum: Absolute Minimum: Relative Maximum: Relative Minimum: Label the extrema that this function has. Does an odd degree function ever have absolute extrema? Yes/No How many extrema could a 7th degree function have? How many extrema could a 6th degree function have?	**Multiplicity** The _____ of times a number is a _____ for a given polynomial function. Write 2 different functions with the given characteristics and graph one of them. 1. X-Intercepts: x=2, x= - 3, and x=0 2. X-Intercepts: x=1 (Multiplicity 3) Does an x-intercept with even multiplicity bounce or cross? _____ Does an x-intercept with odd multiplicity bounce or cross? _____	