Entry #: ______

Lesson 2.5: Transformations of Functions

Transformations of Functions

Any adjustment made to a function always produces a ______________________ .

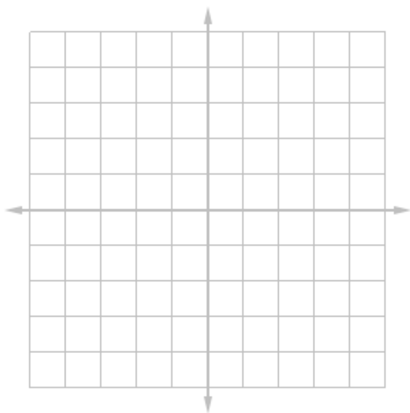
Adjustment	Result
$y = -f(x)$	Reflect across the *x*-axis.
$y = f(-x)$	Reflect across the *y*-axis.
	Shift up if $d > 0$, shift down if $d < 0$.
$y = f(x - c)$	
$y = a \cdot f(x)$	
	Horizontal squeeze if $b > 1$, horizontal stretch if $b < 1$ (assuming b is positive, otherwise a reflection is needed).
$y = \|f(x)\|$	
$y = f(\|x\|)$	

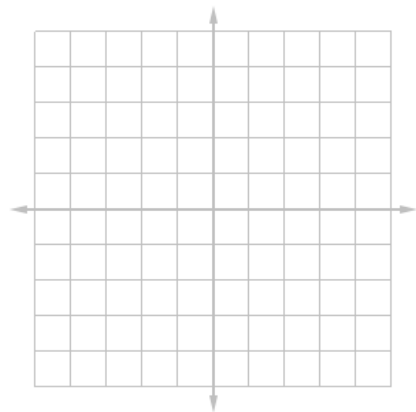
Entry #: ______

Even and Odd Functions

Let f be a function.

f is **even** if $f(-x) = f(x)$ for all x in the domain of f.
f is **odd** if $f(-x) = -f(x)$ for all x in the domain of f.





Examples: Determine whether the functions are even, odd, or neither.

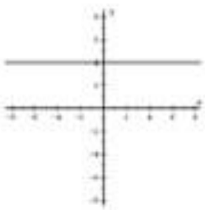
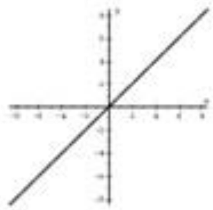
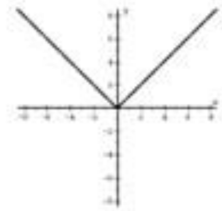
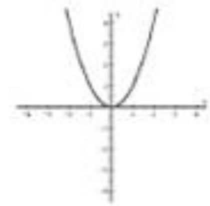
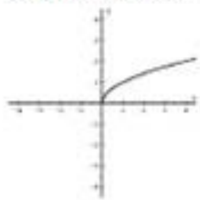
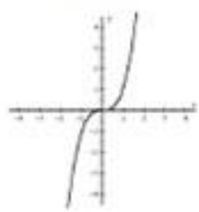
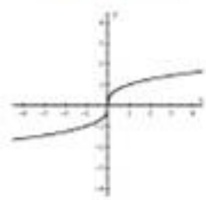
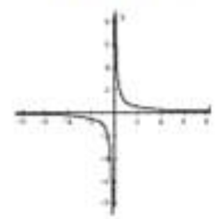
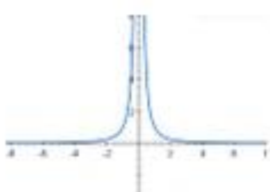
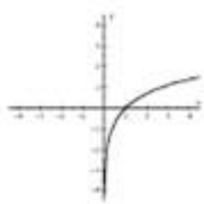
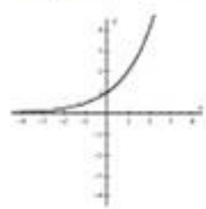
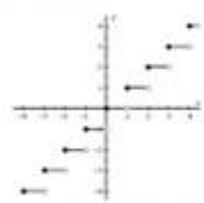
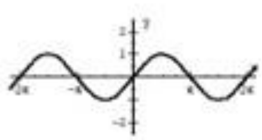
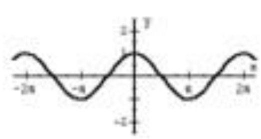
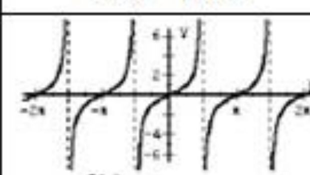
1. $f(x) = x^5 + x$

2. $g(x) = 1 - x^4$

3. $h(x) = 2x - x^2$

Entry #: ______

Parent Functions

Constant  $f(x) = c$	Linear  $f(x) = x$	Absolute Value  $f(x) = \|x\|$	Quadratic  $f(x) = x^2$
Square Root  $f(x)=\sqrt{x}$	Cubic  $f(x) = x^3$	Cube Root  $f(x) = \sqrt[3]{x}$	Reciprocal/Inverse/ Rational  $f(x) = \frac{1}{x}$
Rational  $f(x) = \frac{1}{x^2}$	Logarithmic  $f(x) = \ln(x)$	Exponential  $f(x) = e^x$	Greatest Integer (Step Function)  $f(x) = [[x]]$
Trigonometric Functions →	 $f(x) = \sin(x)$	 $f(x) = \cos(x)$	 $f(x) = \tan(x)$