Algebra 2
4.6 Dilations

Name: _____
Period: _____

You will be graphing horizontal and vertical dilations of the function $y = |x|$. A dilation is just a fancy word for a **stretch**!

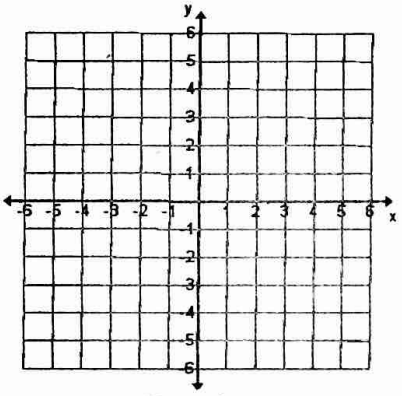
Use one of the following functions to fill in the missing equations below:

~~$f(x) = 2|x|$~~ $g(x) = |2x|$ $h(x) = \left|\frac{1}{2}x\right|$ $j(x) = \frac{1}{2}|x|$ $k(x) = |x+2|$ $n(x) = \left|\frac{1}{3}x\right|$

Graph the parent function (x, y) and dilation $(x, 2y)$.

Parent

x	y	$2y$
−2	2	
−1	1	
0		
1		
2		



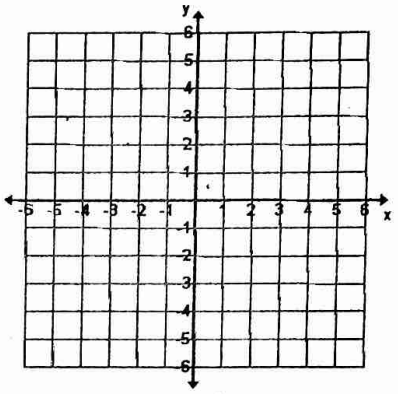
Dilation: Vertical Stretch by a factor of 2

Equation: $f(x) = 2|x|$

Graph the parent function (x, y) and dilation $\left(x, \frac{1}{2}y\right)$.

Parent

x	y	
−2		
−1		
0		
1		
2		



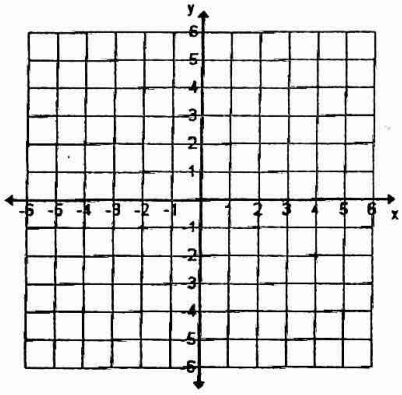
Dilation:

Equation:

Graph the parent function (x, y) and dilation $(3x, y)$.

Parent

$3x$	x	y
	−2	
	−1	
	0	
	1	
	2	



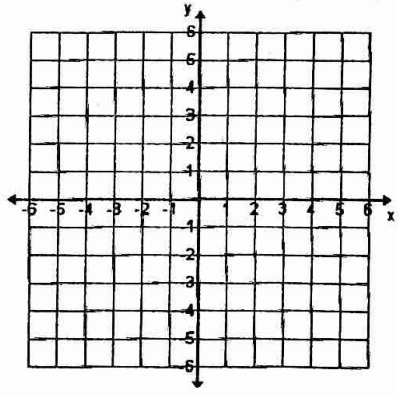
Dilation:

Equation:

Graph the parent function (x, y) and dilation $\left(\frac{1}{2}x, y\right)$.

Parent

	x	y
	−2	
	−1	
	0	
	1	
	2	



Dilation:

Equation:

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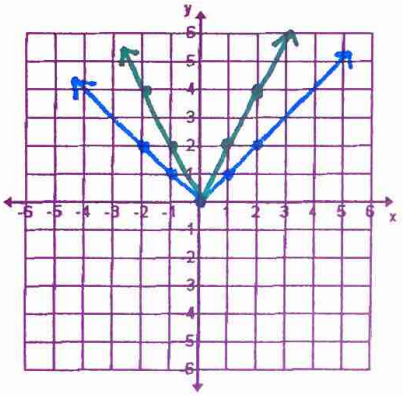
Graph the parent function (x, y) and dilation $(x, 2y)$.

Parent

x	y	$2y$
−2	2	4
−1	1	2
0	0	0
1	1	2
2	2	4



Dilation:

Vertical Stretch by a factor of 2

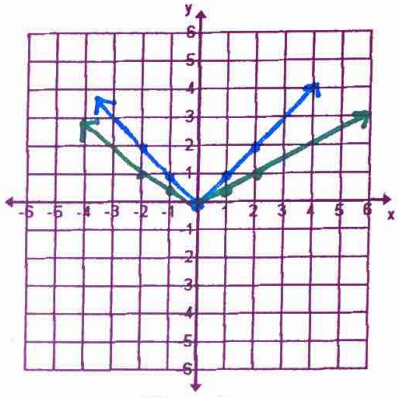
Equation:

$f(x) = 2|x|$

Graph the parent function (x, y) and dilation $\left(x, \frac{1}{2}y\right)$.

Parent

x	y	$\frac{1}{2}y$
−2	2	1
−1	1	½
0	0	0
1	1	½
2	2	1



Dilation:

V.D.
BAFO ½
wider

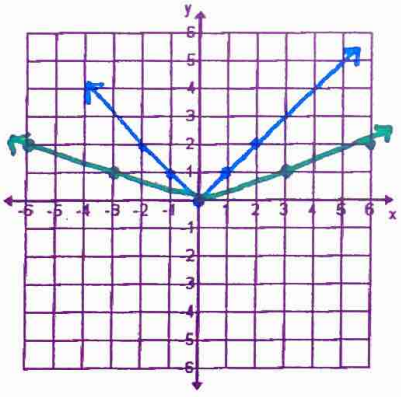
Equation:

$j(x) = \frac{1}{2}|x|$

Graph the parent function (x, y) and dilation $(3x, y)$.

Parent

$3x$	x	y
−6	−2	2
−3	−1	1
0	0	0
3	1	1
6	2	2



Dilation:

H.D.
BAFO 3
wider

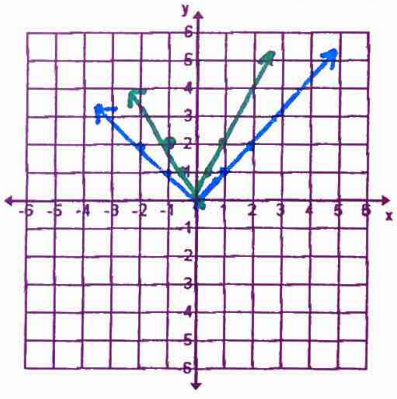
Equation:

$n(x) = \left|\frac{1}{3}x\right|$

Graph the parent function (x, y) and dilation $\left(\frac{1}{2}x, y\right)$.

Parent

$\frac{1}{2}x$	x	y
−1	−2	2
−½	−1	1
0	0	0
½	1	1
1	2	2



Dilation:

H.D. BAFO
½

Equation:

$g(x) = |2x|$