

LESSON 2.4 Skills Practice

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Side to Side
Horizontal Dilations of Quadratic Functions

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Vocabulary

1. Explain the differences and similarities between horizontal dilation, horizontal stretching, and horizontal compression of a quadratic function.

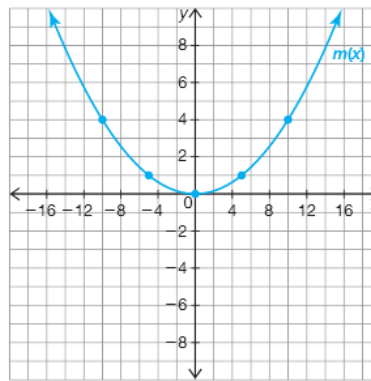
Problem Set

Complete the table and graph $m(x)$. Then, describe how the graph of $m(x)$ compares to the graph of $f(x)$.

1. $f(x) = x^2$; $m(x) = f\left(\frac{1}{5}x\right)$

Reference Points on $f(x)$	→	Corresponding Points on $m(x)$
(0, 0)	→	(0, 0)
(5, 25)	→	(5, 1)
(10, 100)	→	(10, 4)
(15, 225)	→	(15, 9)

The function $m(x)$ is a horizontal stretch of $f(x)$ by a factor of 5.



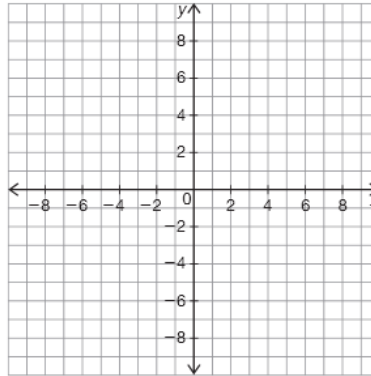
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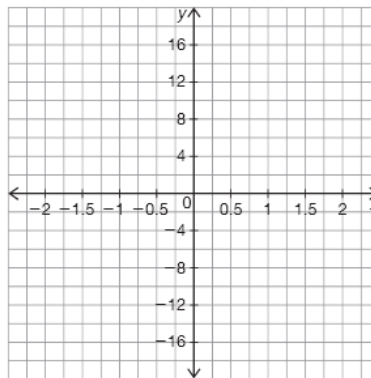
2. $f(x) = x^2$; $m(x) = f(1.5x)$

Reference Points on $f(x)$	→	Corresponding Points on $m(x)$
(0, 0)	→	
(1, 1)	→	
(2, 4)	→	
(4, 16)	→	



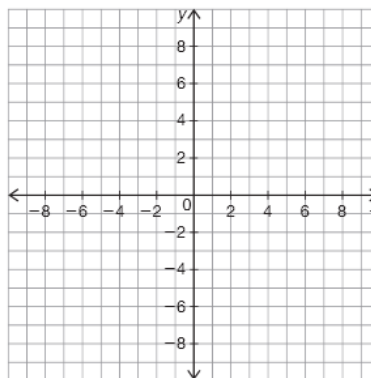
3. $f(x) = x^2$; $m(x) = f(4x)$

Reference Points on $f(x)$	→	Corresponding Points on $m(x)$
(0, 0)	→	
(0.5, 0.25)	→	
(1, 1)	→	
(2, 4)	→	



4. $f(x) = x^2$; $m(x) = f(0.25x)$

Reference Points on $f(x)$	→	Corresponding Points on $m(x)$
(0, 0)	→	
(4, 16)	→	
(8, 64)	→	
(12, 144)	→	



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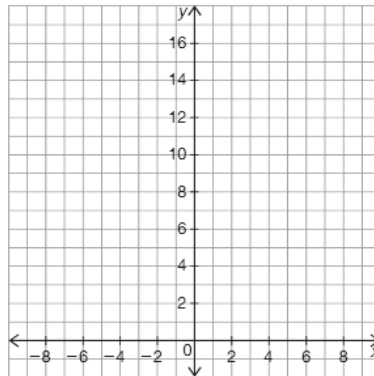
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5. $f(x) = x^2$; $m(x) = f\left(\frac{2}{3}x\right)$

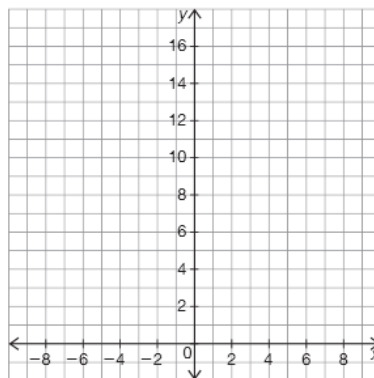
Reference Points on $f(x)$	→	Corresponding Points on $m(x)$
(0, 0)	→	
(3, 9)	→	
(6, 36)	→	
(9, 81)	→	



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6. $f(x) = x^2$; $m(x) = f(2x)$

Reference Points on $f(x)$	→	Corresponding Points on $m(x)$
(0, 0)	→	
(1, 1)	→	
(2, 4)	→	
(3, 9)	→	



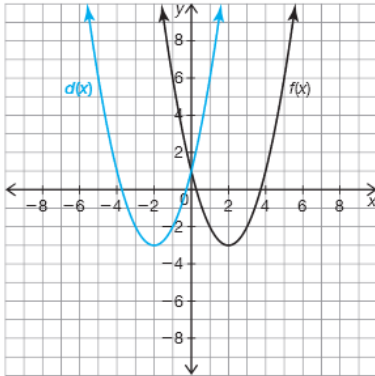
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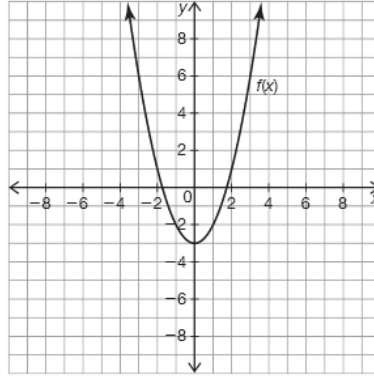
The graph of $f(x)$ is shown. Sketch the graph of the given transformed function.

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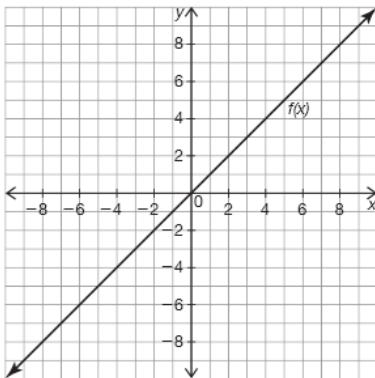
7. $d(x) = f(-x)$



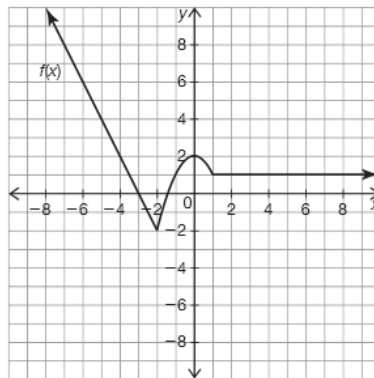
8. $t(x) = -f(x - 4)$



9. $m(x) = -2f(x + 3) + 5$



10. $g(x) = (-x + 1) - 4$



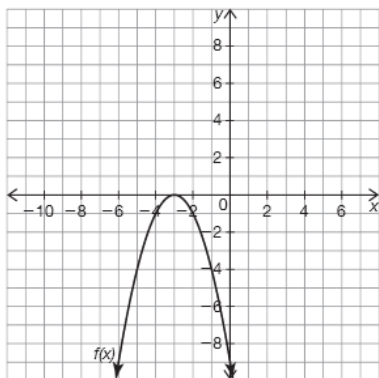
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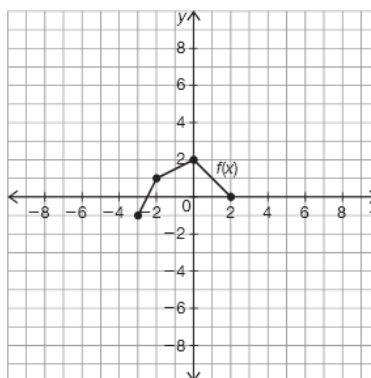
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11. $r(x) = f\left(\frac{1}{2}x - 1\right) + 2$

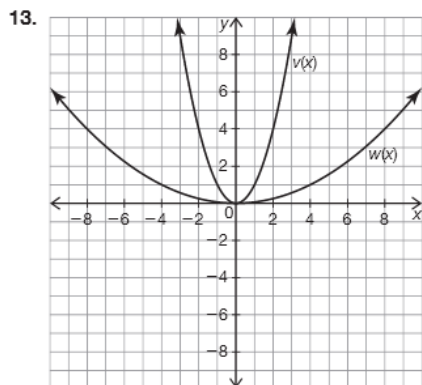


12. $p(x) = -f(x + 1) - 3$

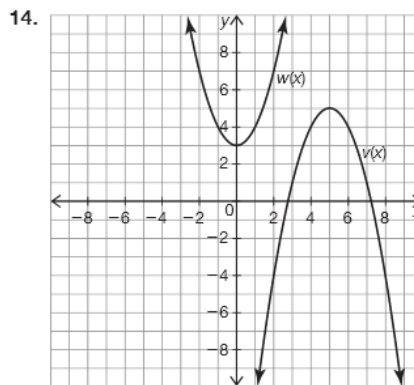


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Write an equation for $w(x)$ in terms of $v(x)$.



$w(x) = v\left(\frac{1}{4}x\right)$

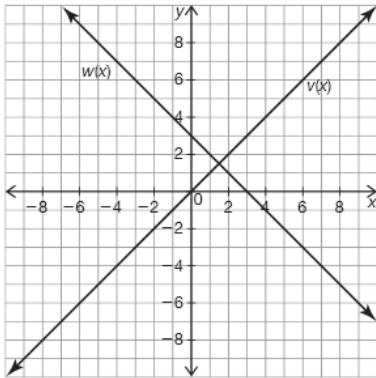


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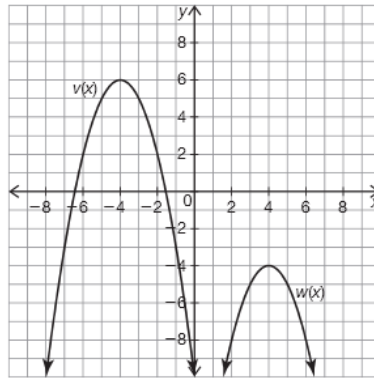
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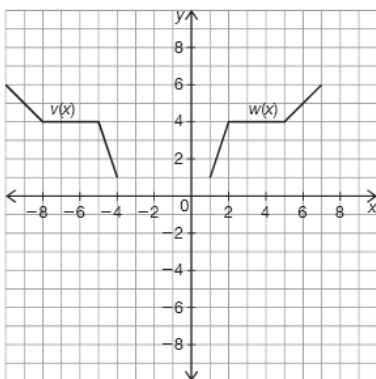
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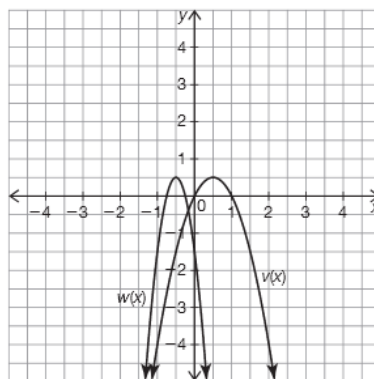
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17.



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