

Worksheet 5.1 Describing & Translating Quadratic Equations

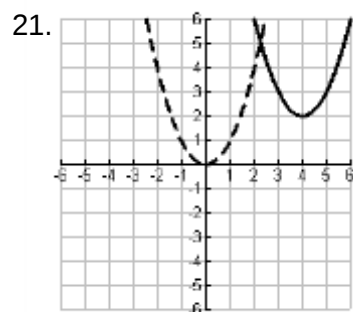
1-12: Complete the chart describing each pair of quadratic equations comparing vertices (same/different AND maximum/minimum) and shape (same/different)

#	Quadratics	Opens	a	Vertex	Max/Min	Description
1	$y = 2(x - 2)^2 + 7$	up	2	(2, 7)	min	Both parabolas turn up, sharing the same vertices which are minimums but they have different shapes.
	$y = 3(x - 2)^2 + 7$	up	3	(2, 7)	min	
2	$y = -\frac{1}{2}(x - 5)^2 - 3$					
	$y = 4(x + 5)^2 - 3$					
3	$y = -\frac{1}{3}x^2 + 8$					
	$y = -\frac{1}{3}x^2 + 8$					
4	$y = 8(x - 2)^2 + 8$					
	$y = 8(x - 2)^2 - 8$					
5	$y = \frac{2}{5}(x + 1)^2 - 4$					
	$y = -\frac{2}{5}(x + 1)^2 - 4$					
6	$y = 2(x - 3)^2 + 5$					
	$y = \frac{1}{2}(x + 5)^2 - 3$					
7	$y = 3(x - 10)^2 + 11$					
	$y = -4(x - 10)^2 + 11$					
8	$y = 2(x - 6)^2 + 7$					
	$y = -2(x - 6)^2 + 7$					
9	$y = -5(x - 8)^2 + 1$					
	$y = -6(x - 8)^2 - 1$					
10	$y = -\frac{1}{6}(x - 3)^2 + 6$					
	$y = -6(x - 3)^2 + 6$					
11	$y = -\frac{1}{4}(x - 2)^2 + 5$					
	$y = -\frac{1}{4}(x + 2)^2 + 5$					
12	$y = 7(x - 4)^2$					
	$y = 7(x - 4)^2$					

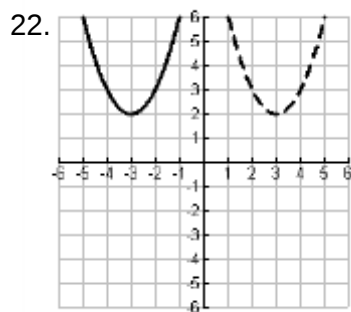
13-20: Describe the translation from the first quadratic equation to the second quadratic equation.

13. $y = 2(x-1)^2 + 3$; $y = 2(x+1)^2 - 3$ 14. $y = \frac{3}{4}(x-5)^2 - 10$; $y = \frac{3}{4}(x-8)^2 - 2$ 15. $y = (x+4)^2 + 7$; $y = (x-8)^2 - 5$
 16. $y = -3(x-6)^2 + 9$; $y = -3(x-14)^2 + 4$ 17. $y = x^2 + 5$; $y = (x+8)^2 + 5$ 18. $y = -(x+2)^2$; $y = -(x-2)^2 + 9$
 19. $y = -\frac{1}{2}(x-3)^2 + 6$; $y = -\frac{1}{2}x^2 + 7$ 20. $y = 4x^2$; $y = 4(x+3)^2 + 15$

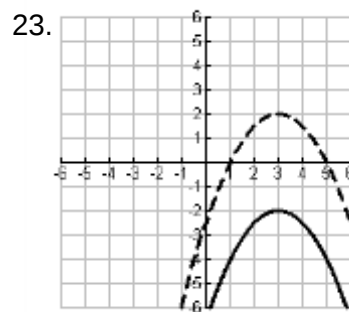
21-25: Write the equation of the translated quadratic graph (solid) given the original quadratic equation (dashed).



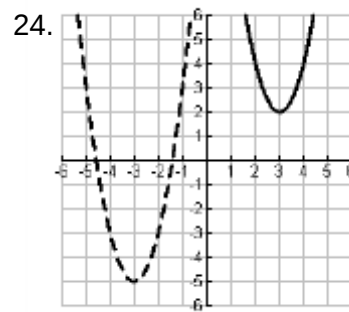
$$y = x^2$$



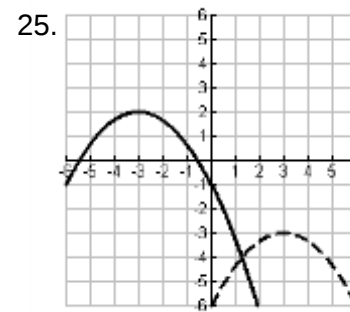
$$y = (x-3)^2 + 2$$



$$y = -\frac{1}{2}(x-3)^2 + 2$$



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



$$y = -\frac{1}{3}(x+3)^2 - 3$$

26-30: Graph each quadratic equation (as a solid line) by first graphing its parent function (as a dashed line) and then translating it.

