

# Section 4.4 Practice Master

1. Copy and complete the table for each parabola. Replace the heading for the second column with the equation for the parabola.

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

b)  $y = \frac{1}{3}(x + 1)^2 - 4$

c)  $y = -2(x + 4)^2 + 3$

Property	$y = a(x - h)^2 + k$
vertex	
axis of symmetry	
stretch or compression	
direction of opening	
values that $x$ may take	
values that $y$ may take	

2. Sketch each parabola in question 1.

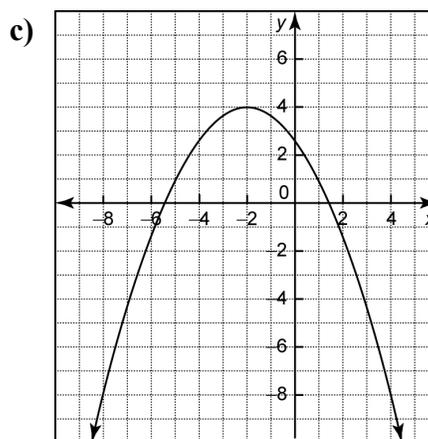
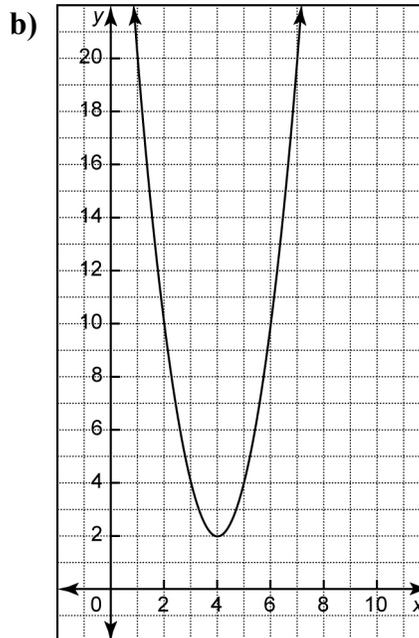
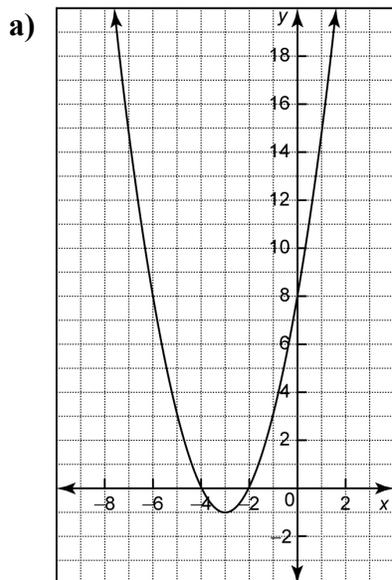
3. Write an equation for the parabola that satisfies each set of conditions.

a) vertex (3, 4), opening downward with a vertical stretch by a factor of 3

b) vertex (-1, 2), opening upward with a vertical compression by a factor of  $\frac{1}{2}$

c) vertex (-2, -4), opening downward with no vertical stretch

4. Write an equation for each parabola.



5. Find an equation for the parabola with vertex (-3, 1) that passes through the point (-2, -1).

6. A rocket travels according to the equation  $h = -4.9(t - 6)^2 + 182$ , where  $h$  is the height, in metres, above the ground and  $t$  is the time, in seconds.

- Sketch a graph of the rocket's motion.
- Find the maximum height of the rocket.
- How long does it take the rocket to reach its maximum height?
- How high was the rocket above the ground when it was fired?