

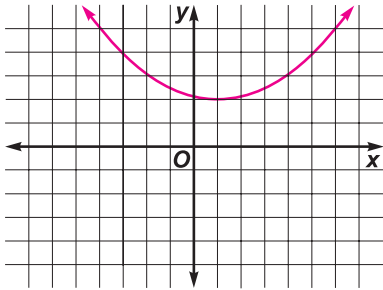
## Practice

## Parabolas

For the equation of each parabola, find the coordinates of the vertex and focus, and the equations of the directrix and axis of symmetry. Then graph the equation.

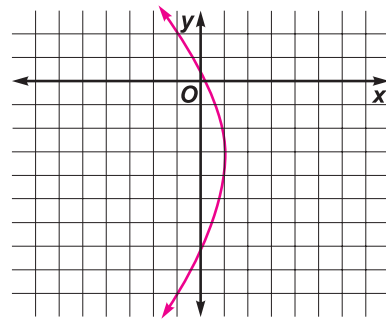
1.  $x^2 - 2x - 8y + 17 = 0$

vertex: (1, 2); focus: (1, 4);  
directrix:  $y = 0$ ;  
axis of symmetry:  $x = 1$



2.  $y^2 + 6y + 9 = 12 - 12x$

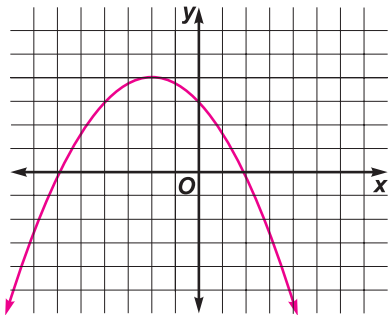
vertex: (1, -3); focus: (-2, -3);  
directrix:  $x = 4$ ;  
axis of symmetry:  $y = -3$



Write the equation of the parabola that meets each set of conditions. Then graph the equation.

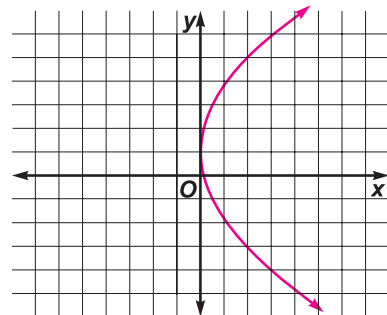
3. The vertex is at (-2, 4) and the focus is at (-2, 3).

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



4. The focus is at (2, 1), and the equation of the directrix is  $x = -2$ .

$$(y - 1)^2 = 8x$$



5. **Satellite Dish** Suppose the receiver in a parabolic dish antenna is 2 feet from the vertex and is located at the focus. Assume that the vertex is at the origin and that the dish is pointed upward. Find an equation that models a cross section of the dish.

$$x^2 = 8y$$

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