

Parabolas Practice

Identify the vertex, focus, directrix, and direction of opening of each parabola.

1. $(x + 4)^2 = 8y$

vertex: $(-4, 0)$ opens up

focus: $(-4, 2)$

directrix: $y = -2$

3. $(y + 3)^2 = 12(x - 2)$

vertex: $(2, -3)$ opens right

focus: $(5, -3)$

directrix: $x = -1$

2. $(y - 5)^2 = -4(x + 3)$

vertex: $(-3, 5)$ opens left

focus: $(-4, 5)$

directrix: $x = -2$

4. $(x - 7)^2 = -(y + 9)$

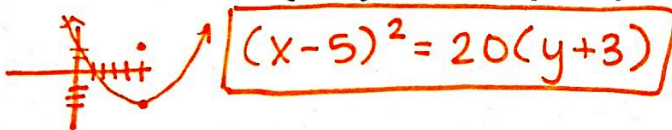
vertex: $(7, -9)$ opens down

focus: $(7, -\frac{37}{4})$

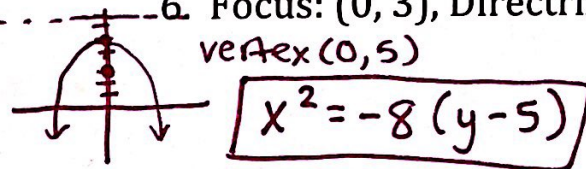
directrix: $y = -\frac{35}{4}$

Use the information provided to write the vertex form of the parabolas below.

5. Focus, $(5, 2)$, Vertex $(5, -3)$

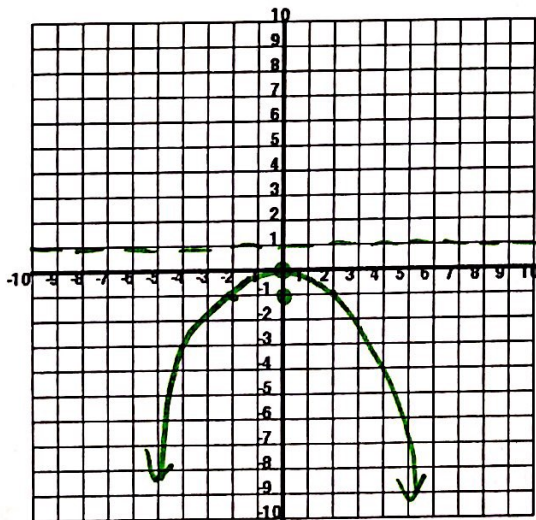


6. Focus: $(0, 3)$, Directrix: $y = 7$
vertex $(0, 5)$

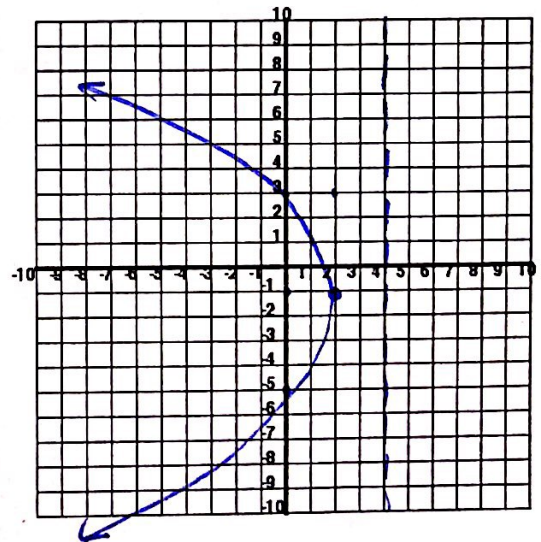


Practice Graphing: Include the vertex, focus, and directrix.

7. $x^2 = -4y$



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



Completing the Square

9. $x^2 + 4x + 10y - 6 = 0$

$$(x^2 + 4x + 4) = -10y + 6 + 4$$

$$(x + 2)^2 = -10y + 10$$

$$(x + 2)^2 = -10(y - 1)$$

10. $y^2 - 6y - 4x + 1 = 0$

$$(y^2 - 6y + 9) = 4x - 1 + 9$$

$$(y - 3)^2 = 4x + 8$$

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