Name _____   Date _____
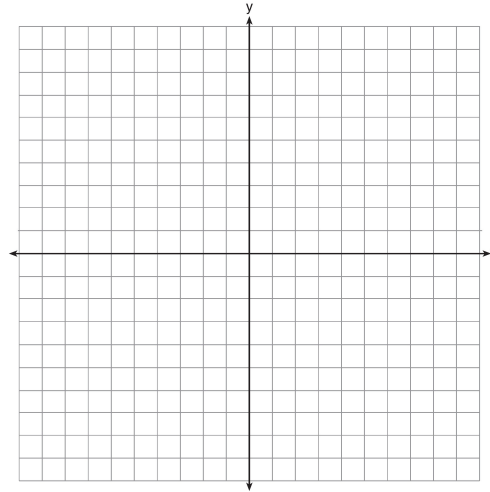Mr. Schlansky   Algebra II
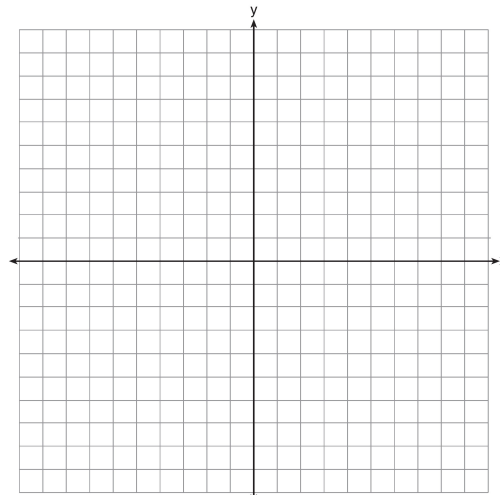
Writing the Equation of a Parabola

For each of the following problems, state the coordinate of the focus and vertex, the equation of the directrix, the value of p, the equation of the parabola, and sketch the parabola.
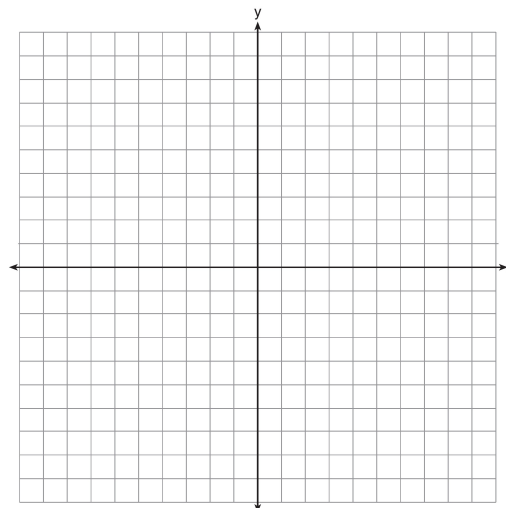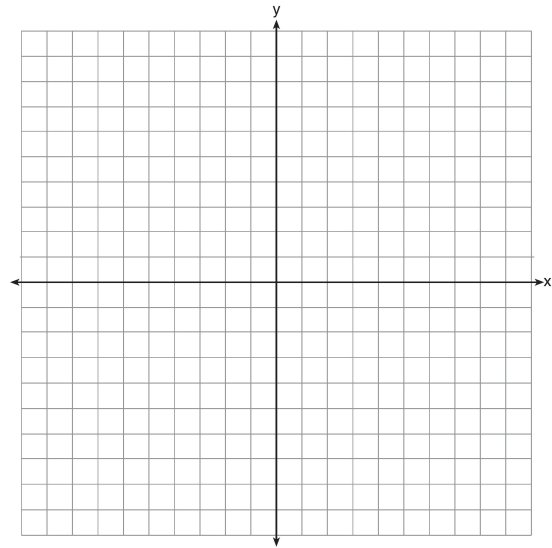
1. Focus: (-3,2), Directrix: $y = 6$

2. Focus: (6,-4), Vertex: (6,-1)
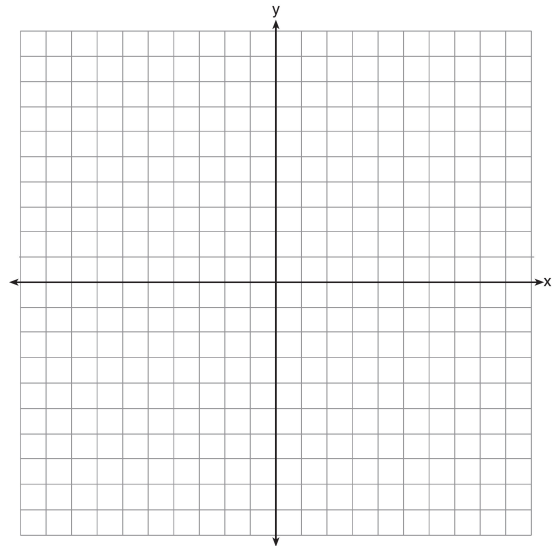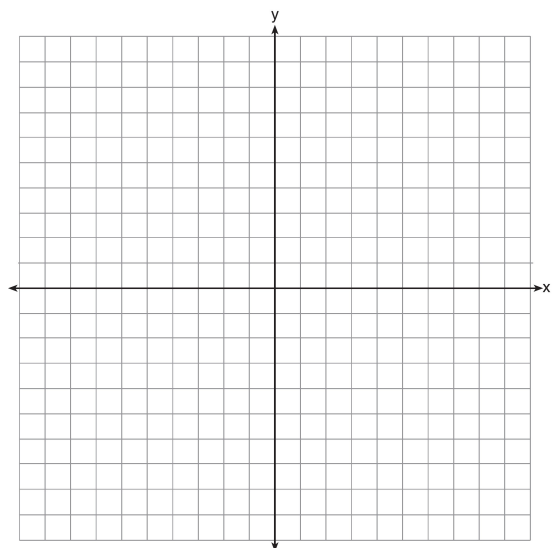
3. Directrix: $y = -1$, Vertex: (2,-4)

4. Focus: (1,-3), Vertex: (1,3)
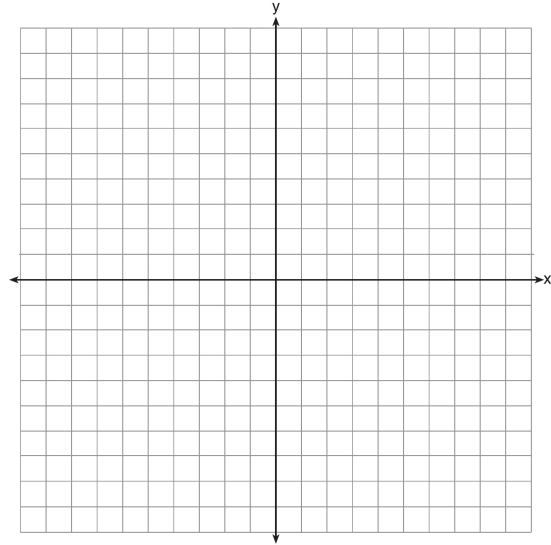
5. Focus: (-1,-2), Vertex: (-1,4)
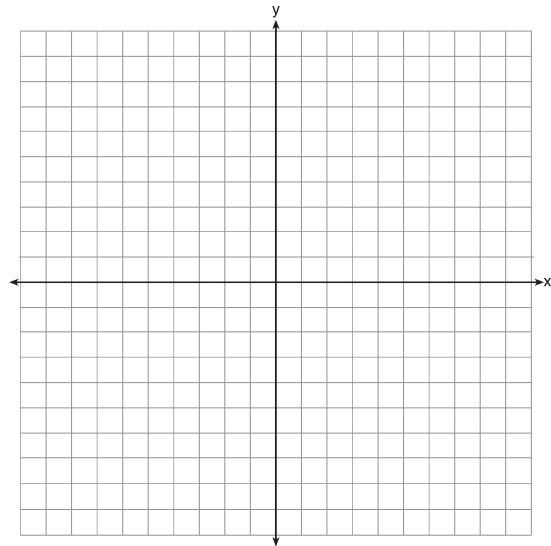
6. Directrix: $y = 0$, Focus: (-4,6)

7. Directrix: $y = -8$, Vertex: (-2,-5)
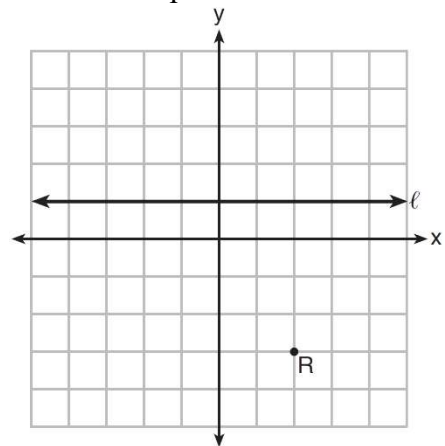
8. Focus: (-4,1), Vertex: (-4,-2)

9. Which equation represents the set of points equidistant from line ℓ and point R shown on the graph below?

1) $y = -\frac{1}{8}(x+2)^2 + 1$

2) $y = -\frac{1}{8}(x+2)^2 - 1$

3) $y = -\frac{1}{8}(x-2)^2 + 1$

4) $y = -\frac{1}{8}(x-2)^2 - 1$

10. Which equation represents the equation of the parabola with focus $(-3, 3)$ and directrix $y = 7$?

1) $y = \frac{1}{8}(x + 3)^2 - 5$

2) $y = \frac{1}{8}(x - 3)^2 + 5$

3) $y = -\frac{1}{8}(x + 3)^2 + 5$

4) $y = -\frac{1}{8}(x - 3)^2 + 5$

11. A parabola has its focus at $(1, 2)$ and its directrix is $y = -2$. The equation of this parabola could be

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

2) $y = \frac{1}{8}(x + 1)^2$

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

4) $y = \frac{1}{8}(x - 1)^2$

12. Which equation represents a parabola with a focus of $(0, 4)$ and a directrix of $y = 2$?

1) $y = x^2 + 3$

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

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

4) $y = \frac{x^2}{4} + 3$

13. Which equation represents a parabola with a focus of $(-2, 5)$ and a directrix of $y = 9$?

1) $(y - 7)^2 = 8(x + 2)$

2) $(y - 7)^2 = -8(x + 2)$

3) $(x + 2)^2 = 8(y - 7)$

4) $(x + 2)^2 = -8(y - 7)$