Finding the Focus, Vertex, and Directrix of a Parabola

✎ *Use the information provided to write the vertex form equation of each parabola.*

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

2) $y = x^2 - 6x + 5$

3) $y + 6 = (x + 3)^2$

4) $y = x^2 + 10x + 33$

5) $y = (x + 5)(x + 4)$

6) $\frac{1}{2}(y + 4) = (x - 7)^2$

7) $162 + 731 = -y - 9x^2$

8) $y = x^2 + 16x + 71$

9) Focus: $(-\frac{63}{8}, -7)$, Directrix: $x = -\frac{65}{8}$

10) Focus: $(\frac{107}{12}, -7)$, Directrix: $x = \frac{109}{12}$

11) Opens up or down, and passes through $(-6, -7), (-11, -2)$, and $(-8, 1)$

12) Opens up or down, and passes through $(11, 15), (7, 7)$, and $(4, 22)$

Answers

Finding the Focus, Vertex, and the Directrix of a Parabola

1) $y = (x + 4)^2 - 16$

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

3) $y = (x + 3)^2 - 6$

4) $y = (x + 5)^2 + 8$

5) $y = (x + \frac{9}{2})^2 - \frac{1}{4}$

6) $y = 2 (x - 7)^2 - 4$

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

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

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

10) $x = -3 (y + 7)^2 + 9$

11) $y = - (x + 9)^2 + 2$

12) $y = (x - 8)^2 + 6$