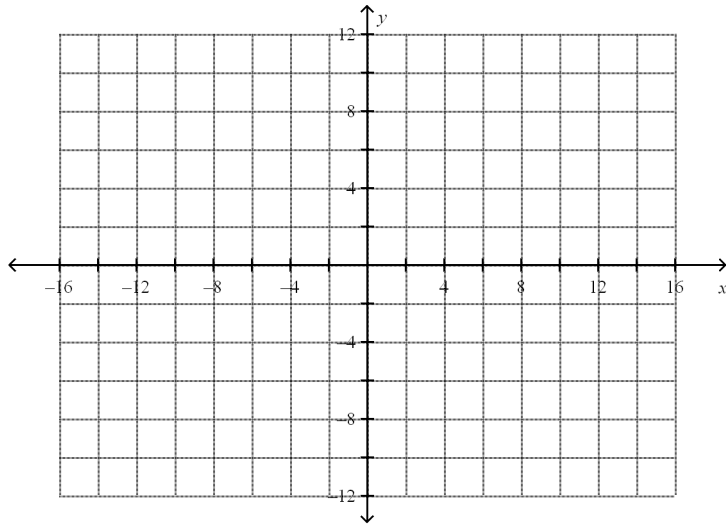# Quadratic Relations.bnk

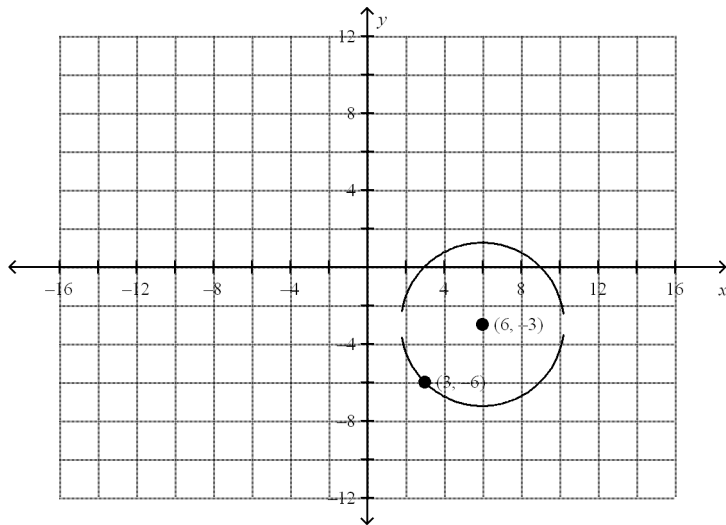**PROBLEM**

1. Write the equation and graph a circle with center $(6,-3)$ containing the point $(3,-6)$.
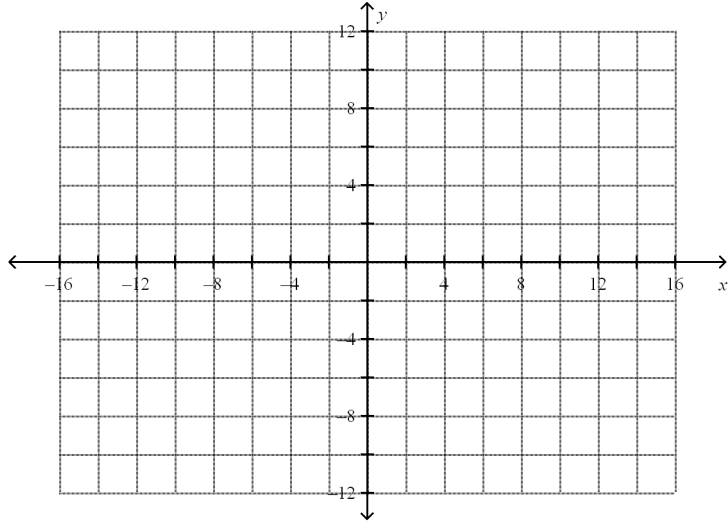

ANS:

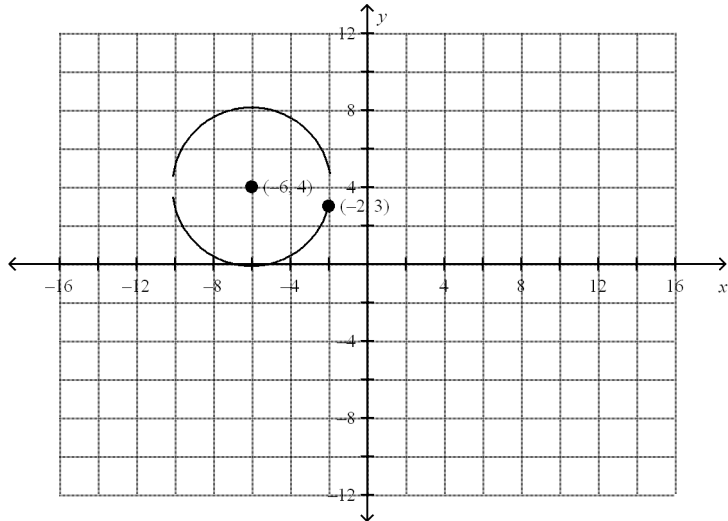Circle: $(x-6)^2 + (y+3)^2 = 18$ Center: $(6,-3)$ $r = 4.24$

PTS: 1

1

2. Write the equation and graph a circle with center $(-6,4)$ containing the point $(-2,3)$.

[Graph: blank coordinate plane with x-axis labeled from -16 to 16 and y-axis labeled from -12 to 12]

ANS:

Circle: $(x+6)^2 + (y-4)^2 = 17$ Center: $(-6,4)$ $r = 4.12$

[Graph: coordinate plane showing a circle centered at $(-6,4)$ passing through point $(-2,3)$]
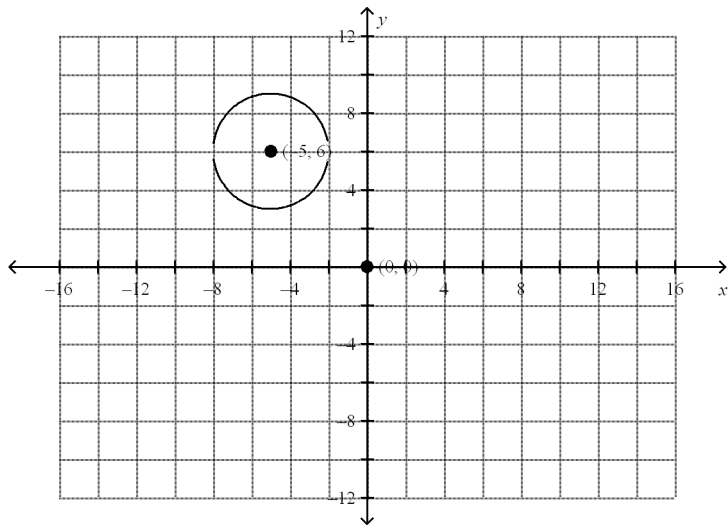
PTS: 1

2

3. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.
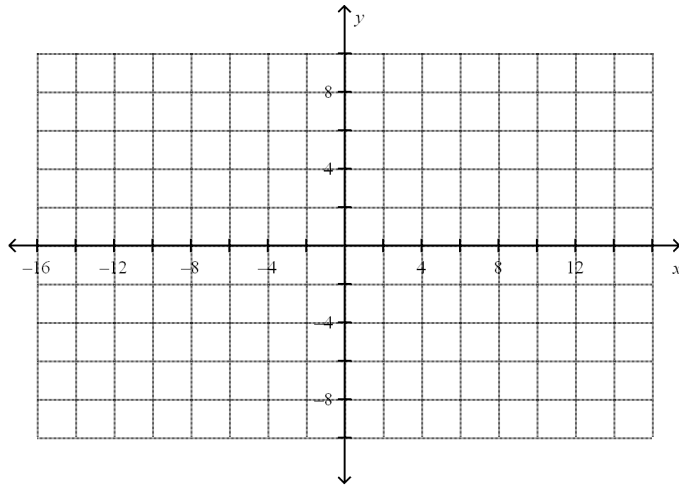
$$x^2 + y^2 + 10x - 12y + 52 = 0$$
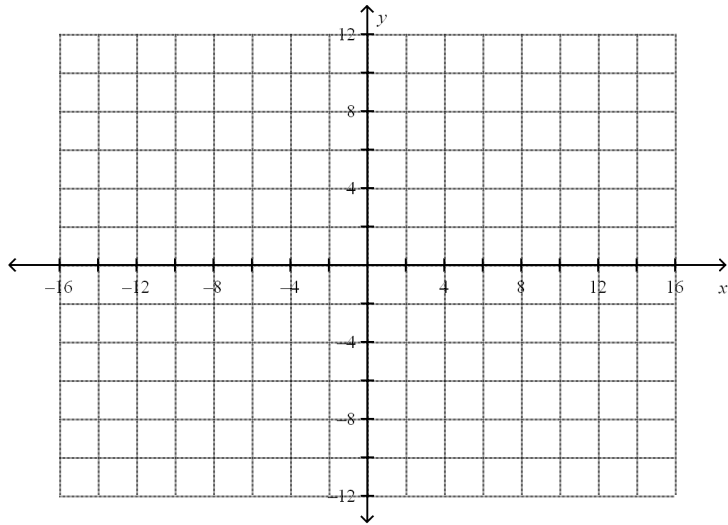
ANS:

Circle: $(x+5)^2 + (y-6)^2 = 9$ Center: $(-5,6)$ $r = 9$
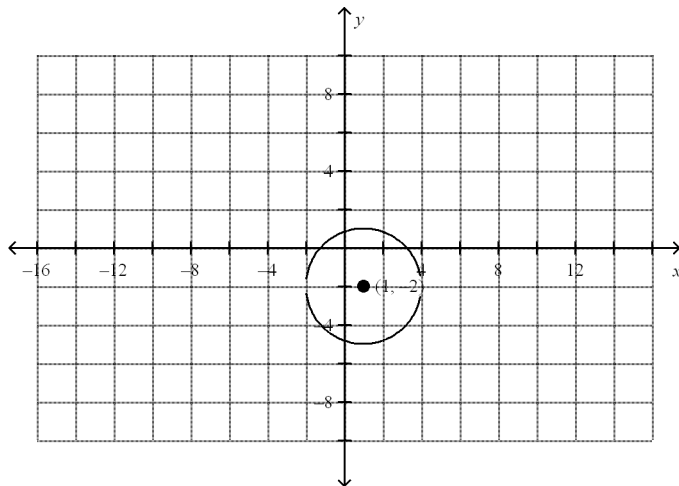

PTS: 1

4. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.
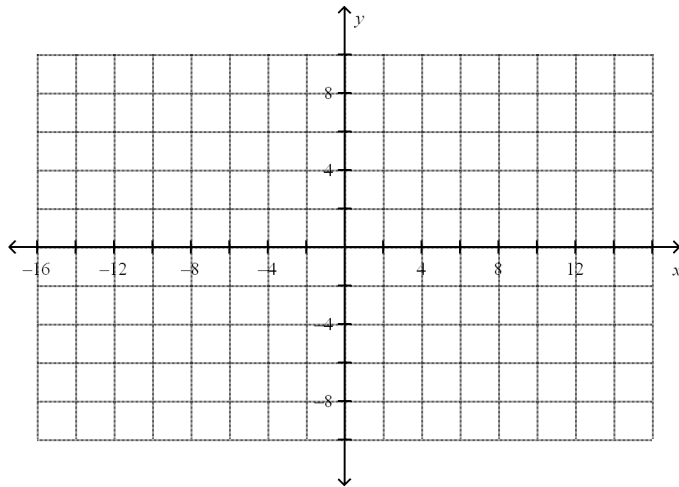
$$9x^2 + 9y^2 - 18x + 36y - 36 = 0$$

ANS:

Circle: $(x-1)^2 + (y+2)^2 = 9$ Center: $(1,-2)$ $r = 3$
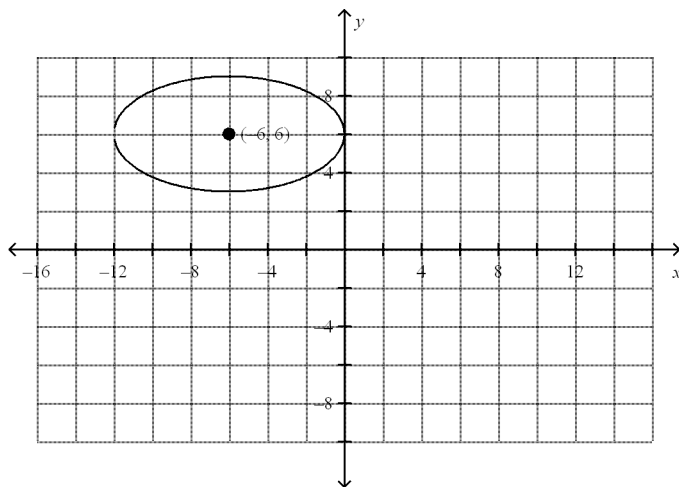
PTS: 1

5. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

$$9x^2 + 36y^2 + 108x - 432y + 1296 = 0$$

ANS:

Ellipse: $\dfrac{(x+6)^2}{6^2} + \dfrac{(y-6)^2}{3^2} = 1$ Center: $(-6,6)$ $a = 6$ $b = 3$
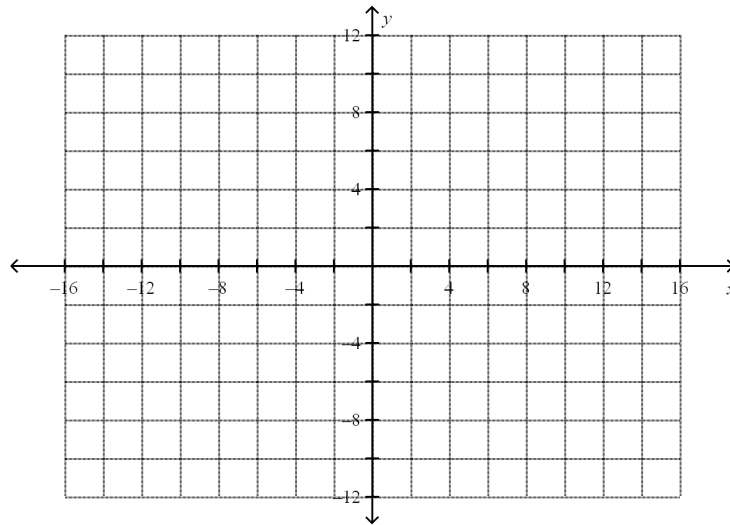
PTS: 1   NOT: Major axis may be parallel to either the x- or y- axes.
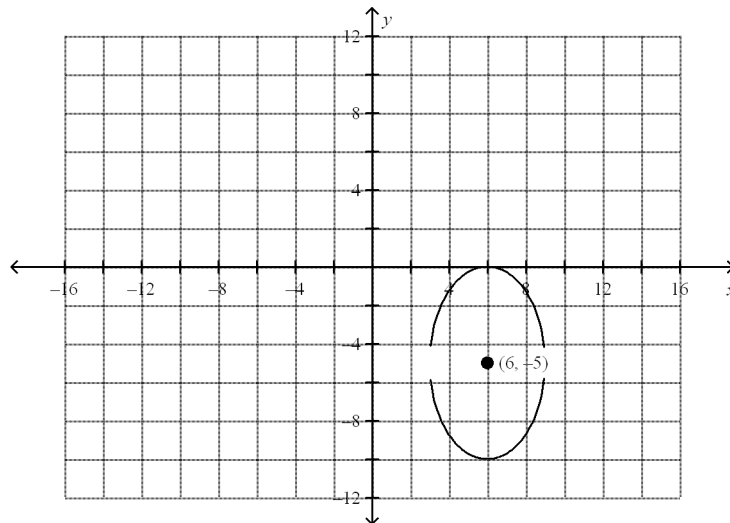
6. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

$$25x^2 + 9y^2 - 300x + 90y + 900 = 0$$

ANS:

Ellipse: $\dfrac{(x-6)^2}{3^2} + \dfrac{(y+5)^2}{5^2} = 1$ Center: $(6,-5)$ $a = 5$ $b = 3$
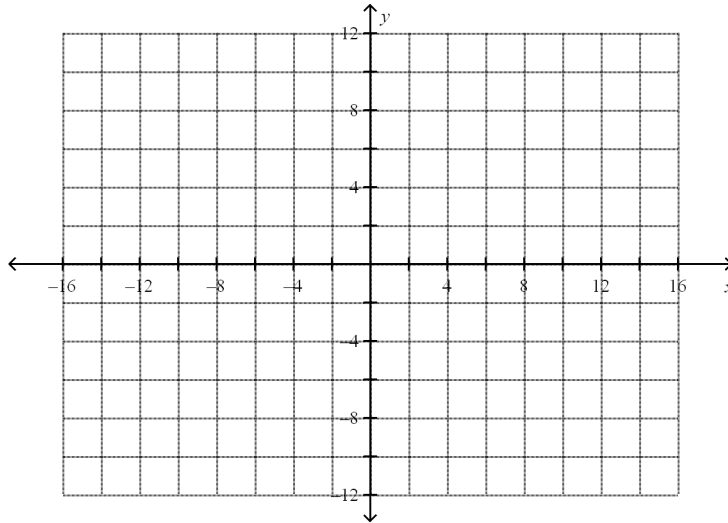
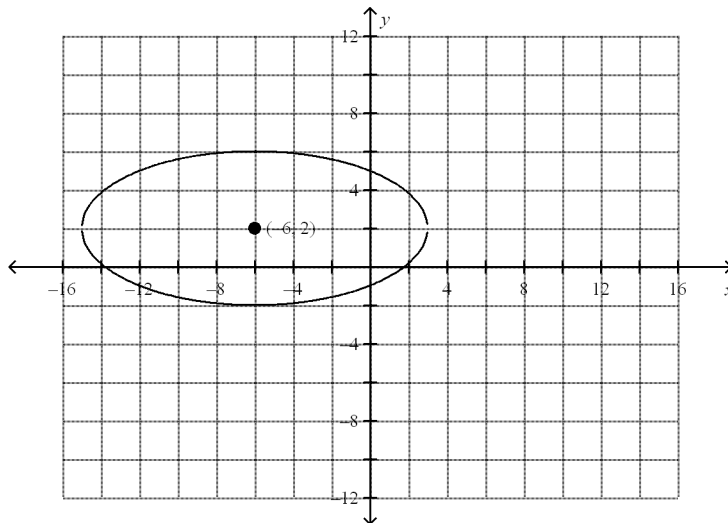PTS: 1   NOT: Major axis is always parallel to the y-axis.

7. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

$$16x^2 + 81y^2 + 192x - 324y - 396 = 0$$

ANS:

Ellipse: $\dfrac{(x+6)^2}{9^2} + \dfrac{(y-2)^2}{4^2} = 1$ Center: $(-6,2)$ $a = 9$ $b = 4$
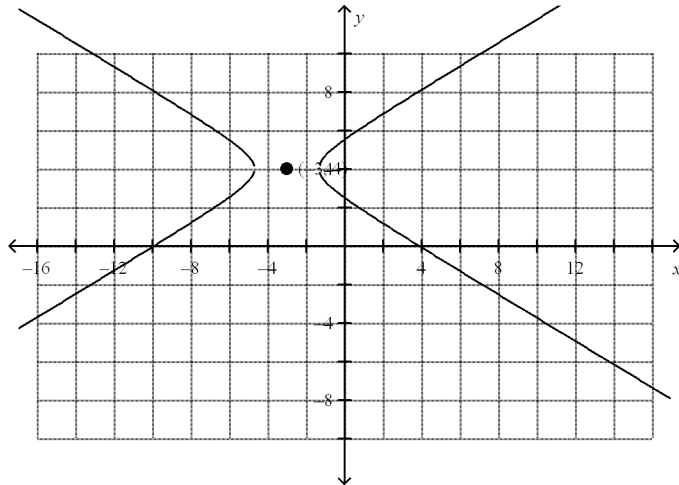

PTS: 1   NOT: Major axis is always parallel to the x-axis.

8. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

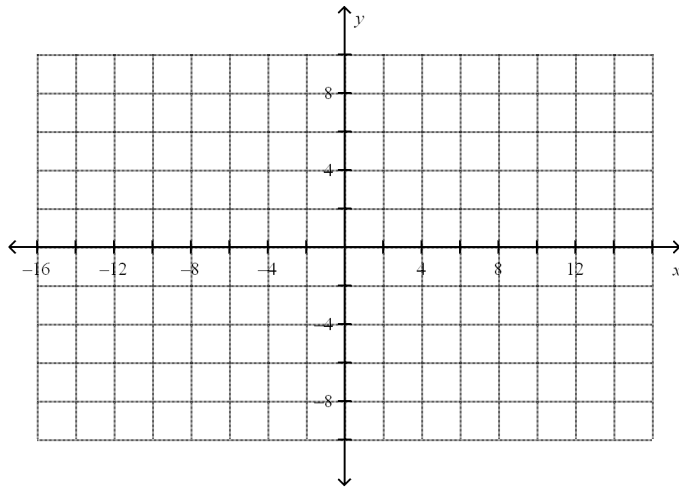$$36x^2 - 100y^2 + 216x + 800y - 4876 = 0$$

ANS:

Hyperbola opening left-right: $\dfrac{(x+3)^2}{10^2} - \dfrac{(y-4)^2}{6^2} = 1$ Center: $(-3,4)$ $a = 10$ $b = 6$
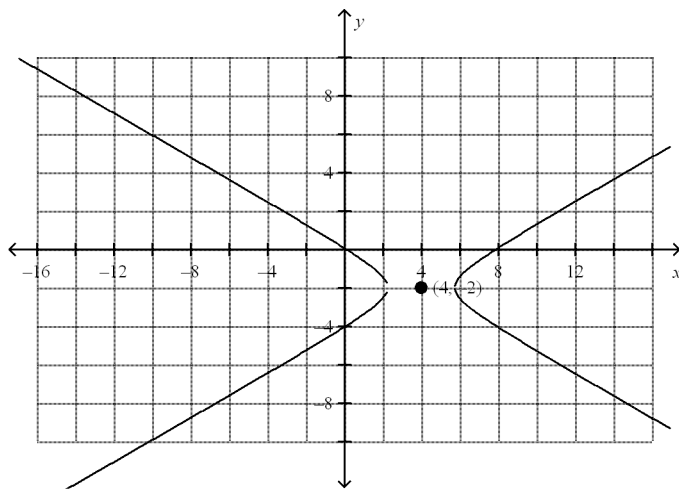

PTS: 1

9. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

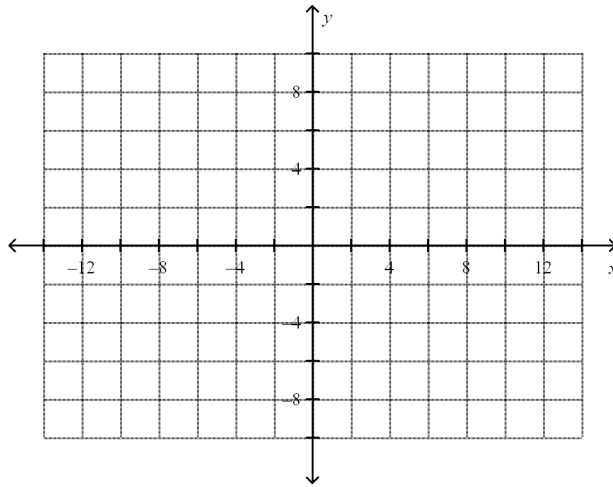$$16x^2 - 49y^2 - 128x - 196y + 844 = 0$$

ANS:

Hyperbola opening up-down: $\dfrac{(y+2)^2}{4^2} - \dfrac{(x-4)^2}{7^2} = 1$ Center: $(4, -2)$ $a = 7$ $b = 4$
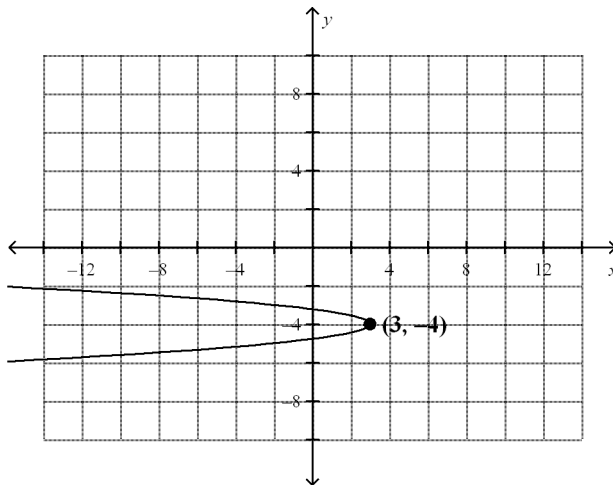
PTS: 1

9

10. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

$$x = -5y^2 - 40y - 77$$

ANS:
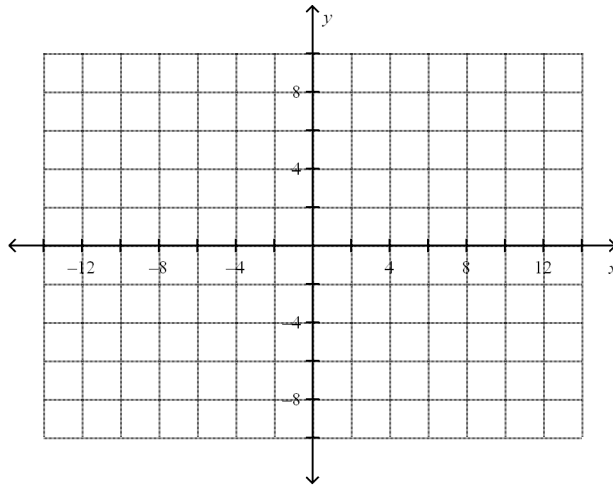Parabola opening left: Vertex: $(3, -4)$ y-intercept 1: $(0, -4.77)$ y-intercept 2: $(0, -3.23)$

PTS: 1   NOT: 2 y-intercepts: rational or irrational
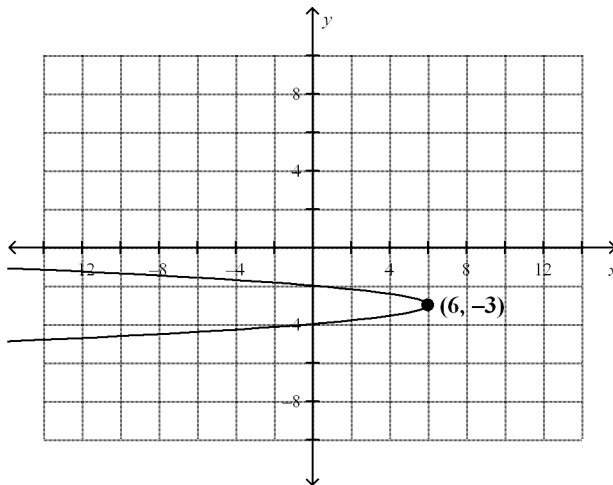
10

11. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

$$x = -6y^2 - 36y - 48$$

ANS:
Parabola opening left: Vertex: $(6, -3)$ y-intercept 1: $(0, -4)$ y-intercept 2: $(0, -2)$
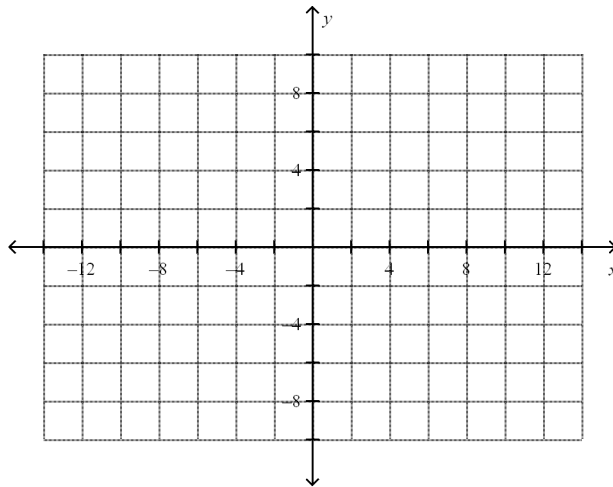

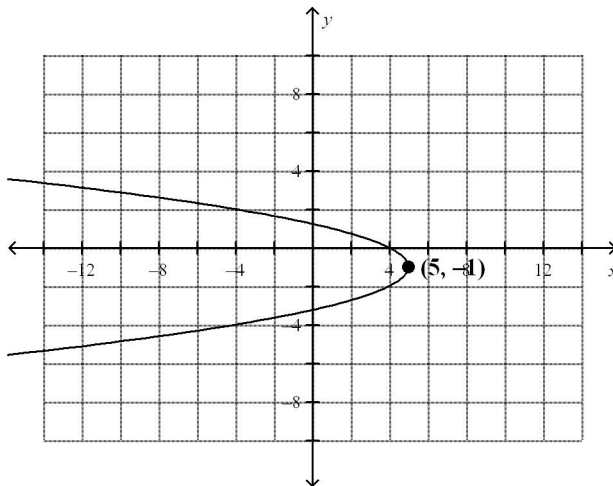PTS: 1   NOT: 2 y-intercepts: both rational

12. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

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

ANS:
Parabola opening left: Vertex: $(5, -1)$ y-intercept 1: $(0, -3.24)$ y-intercept 2: $(0, 1.24)$
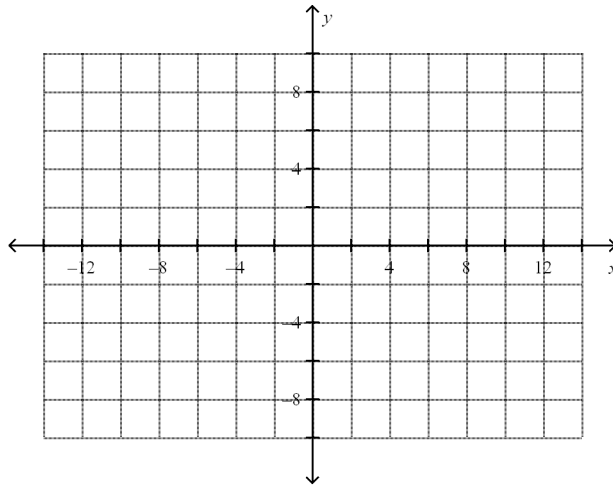

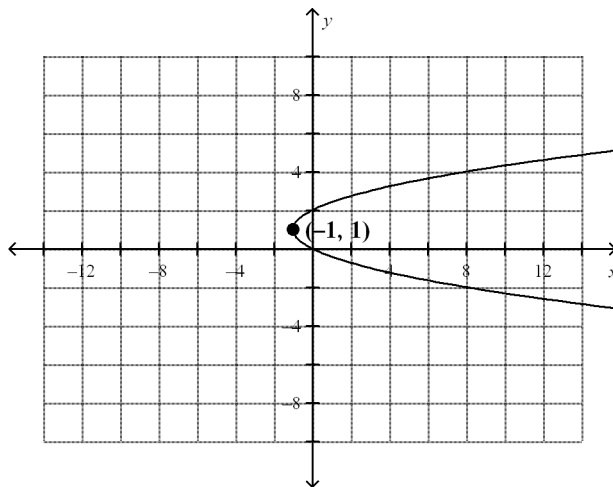PTS: 1   NOT: 2 y-intercepts: both irrational

13. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

$$x = y^2 - 2y0$$

ANS:
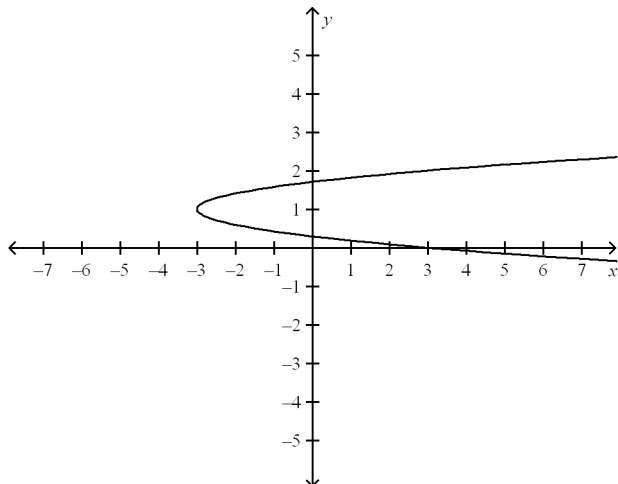Parabola opening right: Vertex: $(-1, 1)$

PTS: 1

14. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

$$x = 6y^2 - 12y + 3$$

ANS:
Parabola opening right: Vertex: $(-3, 1)$ y-intercept 1: $(0, 1.71)$ y-intercept 2: $(0, 0.29)$
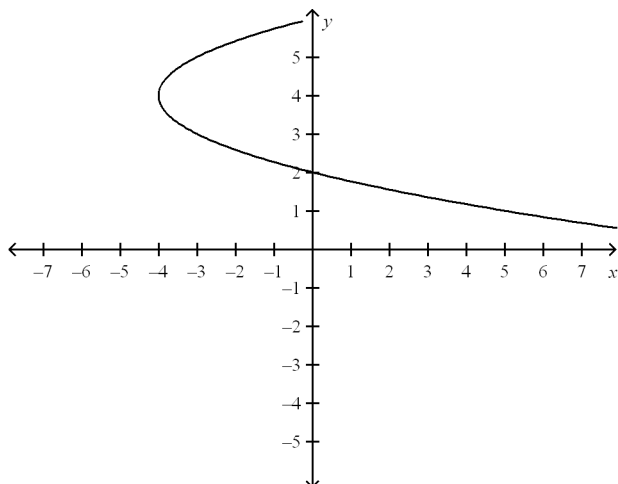

PTS: 1   NOT: 2 y-intercepts: rational or irrational

15. Identify the shape of the graph, transform it into standard form, and sketch the graph indicating the most important parts.

$$x = y^2 - 8y + 12$$

ANS:
Parabola opening right: Vertex: $(-4, 4)$ y-intercept 1: $(0, 6)$ y-intercept 2: $(0, 2)$

PTS: 1   NOT: 2 y-intercepts: both rational

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