

Conic Sections Review

Classify each conic section, write its equation in standard form, and sketch its graph. For parabolas, identify the vertex, focus, and eccentricity. For circles, identify the center, radius, and eccentricity. For ellipses and hyperbolas identify the center, vertices, foci, and eccentricity.

1) $-x^2 + y = 20 + 10x$

2) $0 = 7 - 3x + y^2 - 8y$

3) $25x^2 - 4y^2 + 125 + 150x = 0$

4) $0 = 50x - 25x^2 + 32y + 359 - 16y^2$

5) $-32y + 12x + 45 + 4x^2 = -4y^2$

6) $y + x^2 = -33 + 12x$

7) $14x = -2x^2 - 41 - 2y^2 - 14y$

8) $4x^2 - 100y = 200 + 25y^2$

9) $y^2 - 54x + 2y = -46 - 9x^2$

10) $1 + 4x^2 = 2y + 24x - y^2$

Use the information provided to write the standard form equation of each circle.

11) Center: $(-3, 0)$

Point on Circle: $(-18, -4)$

Use the information provided to write the standard form equation of each ellipse.

12) Vertices: $(-1, 20), (-1, -2)$

Foci: $(-1, 9 + 6\sqrt{2}), (-1, 9 - 6\sqrt{2})$

13) Eccentricity = $\frac{\sqrt{19}}{10}$

Co-vertices: $(8, 10), (-10, 10)$

Use the information provided to write the standard form equation of each hyperbola.

14) Foci: $(-9, 8 + 2\sqrt{74}), (-9, 8 - 2\sqrt{74})$

Asymptotes: $y = \frac{5}{7}x + \frac{101}{7}$

$$y = -\frac{5}{7}x + \frac{11}{7}$$

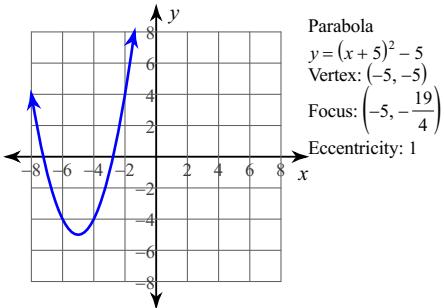
Use the information provided to write the vertex form equation of each parabola.

15) Opens up or down, Vertex: $(-2, 9)$, Passes through: $(-5, 0)$

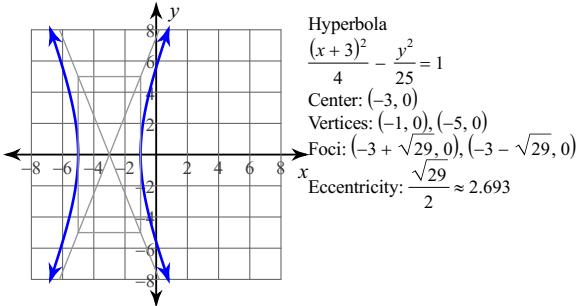
16) Vertex: $(5, -8)$, Directrix: $y = -\frac{17}{2}$

Answers to Conic Sections Review

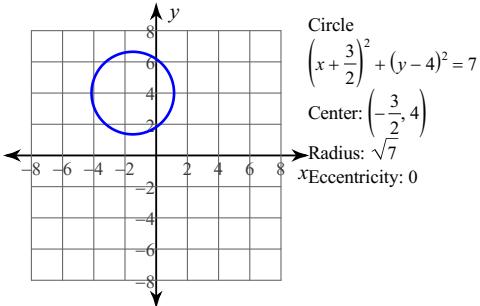
1)



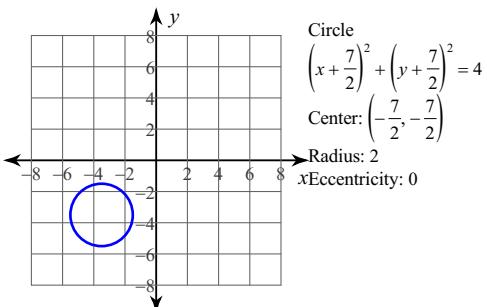
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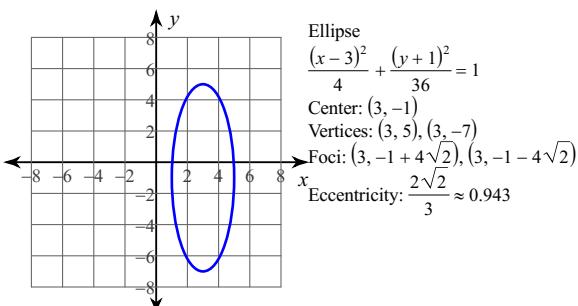
5)



7)



9)



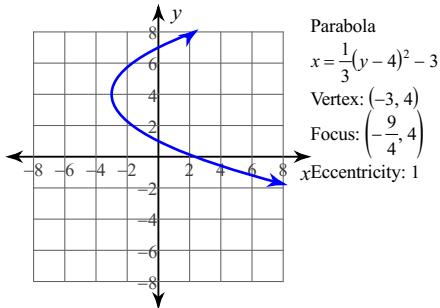
11) $(x + 3)^2 + y^2 = 241$

12) $\frac{(x + 1)^2}{49} + \frac{(y - 9)^2}{121} = 1$

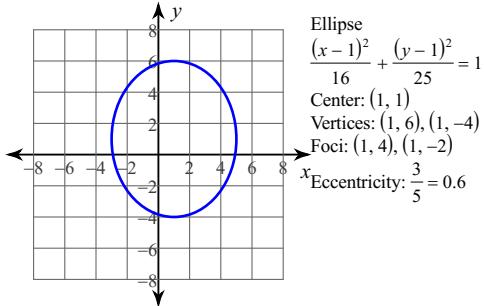
14) $\frac{(y - 8)^2}{100} - \frac{(x + 9)^2}{196} = 1$

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

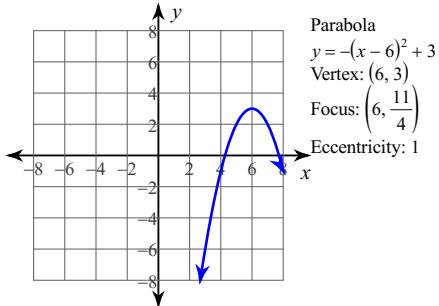
2)



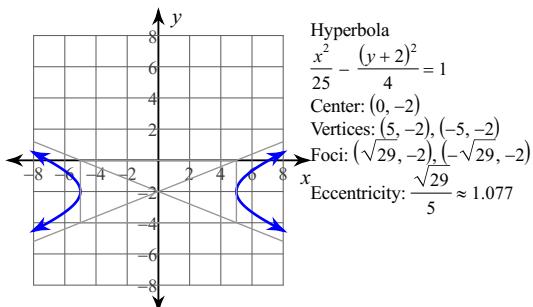
4)



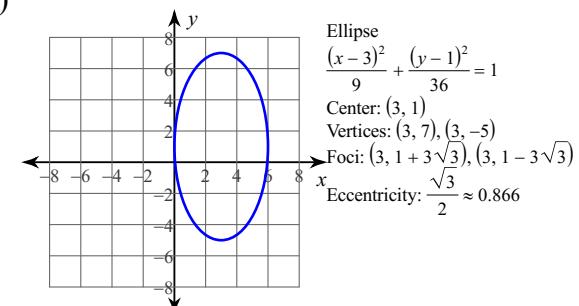
6)



8)



10)



13) $\frac{(x + 1)^2}{81} + \frac{(y - 10)^2}{100} = 1$

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