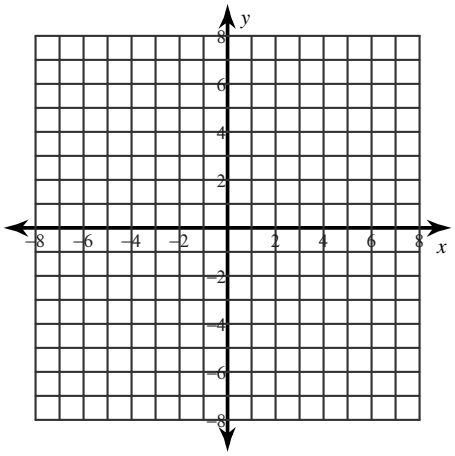
Algebra 2 Name_____

10-4, 10-5 Ellipses and Hyperbolas HW

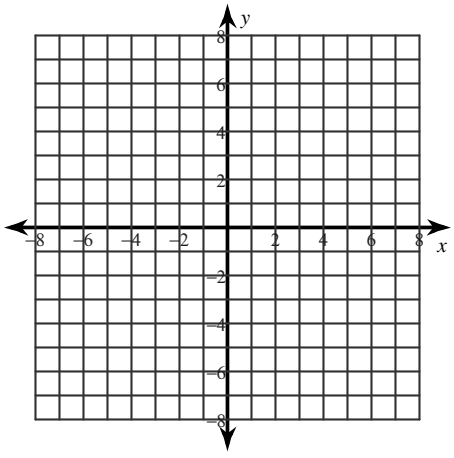
Date_____ Period____

Classify each conic section and sketch its graph. For parabolas, identify the vertex and focus. For circles, identify the center. For ellipses and hyperbolas identify the center, vertices, and foci.

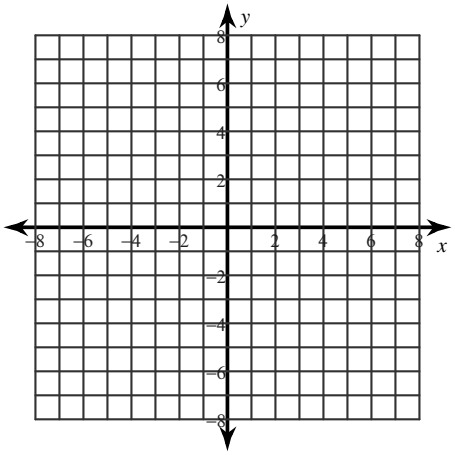
1) $(x-3)^2 + \frac{(y+3)^2}{16} = 1$



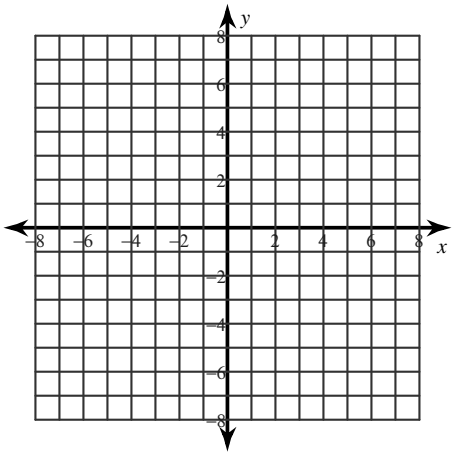
2) $\frac{(x+3)^2}{16} + (y-1)^2 = 1$



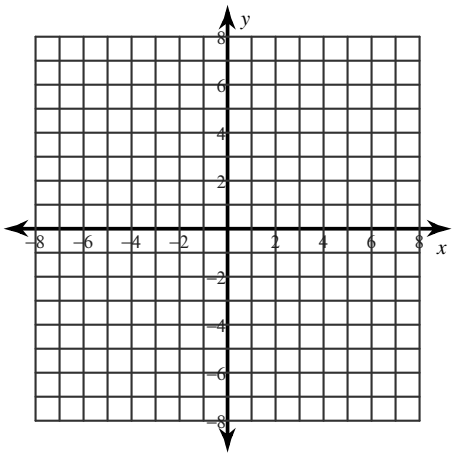
3) $25x^2 + 16y^2 - 100x - 64y - 236 = 0$



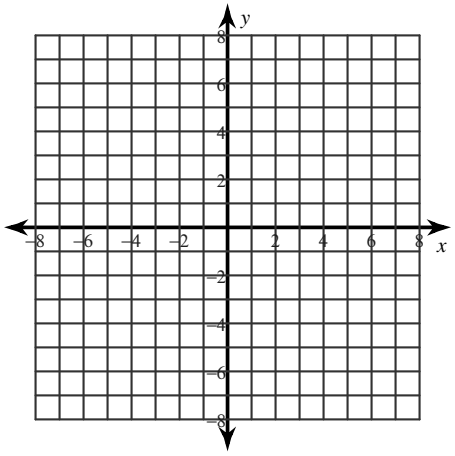
4) $4x^2 + y^2 + 40x - 4y + 88 = 0$



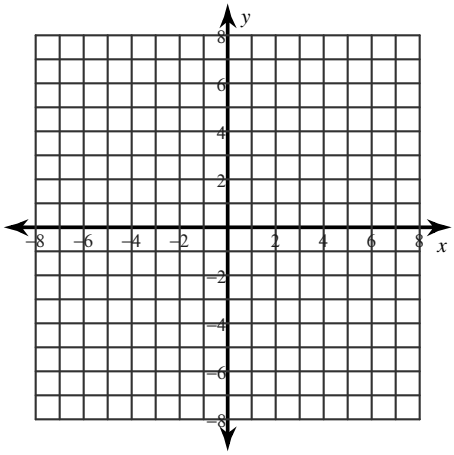
5) $(x+1)^2 - \frac{y^2}{16} = 1$



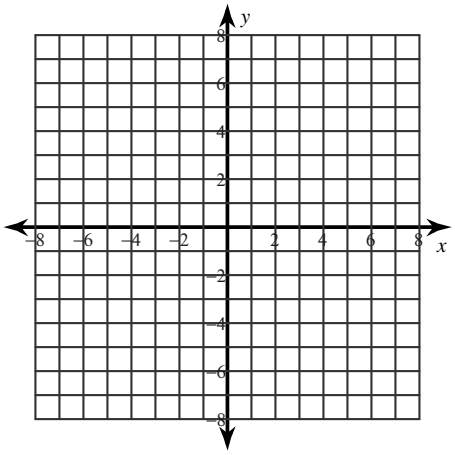
6) $\frac{y^2}{25} - (x-3)^2 = 1$



7) $3x^2 - 5y^2 - 10y - 80 = 0$

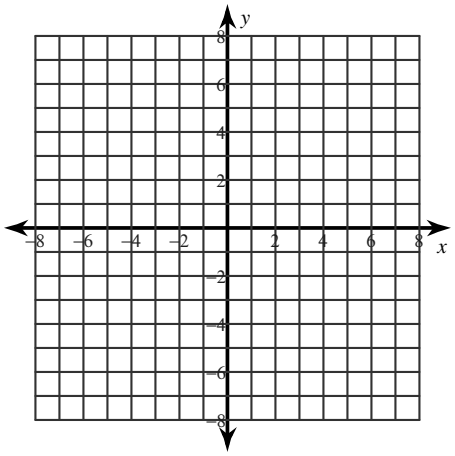


8) $-25x^2 + 16y^2 + 50x - 425 = 0$

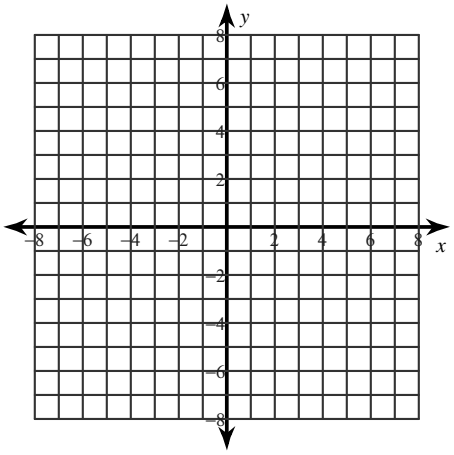


Classify each conic section, write its equation in standard form, and sketch its graph.

9) $x^2 + y^2 + 6x + 8y + 24 = 0$



10) $x^2 + y^2 - 8x - 2y + 9 = 0$



Solve each equation.

11) $\frac{|r-2|}{3} = 2$

12) $8 - 8|6n - 5| = -32$

Factor each completely.

13) $v^2 - 6v - 40$

14) $x^2 - x - 72$

15) $2x^2 + 13x - 24$

16) $10v^2 + 59v + 45$

Evaluate each expression.

17) $\log_6 36$

Expand each logarithm.

18) $\log \frac{a^3}{b^6}$

Condense each expression to a single logarithm.

19) $18 \log x + 6 \log y$

Solve each equation.

20) $\log_6 -3x + \log_6 2 = 1$

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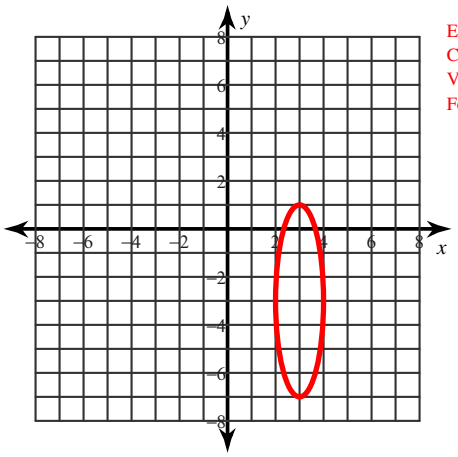
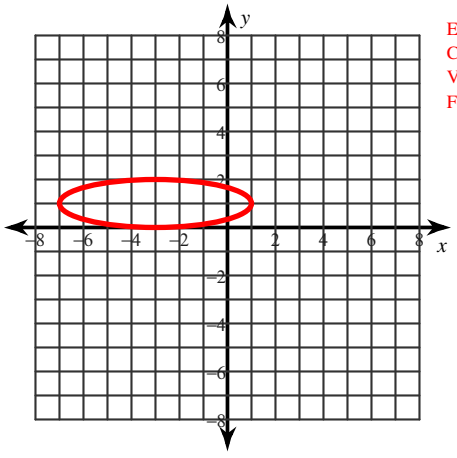
1) $(x-3)^2 + \frac{(y+3)^2}{16} = 1$



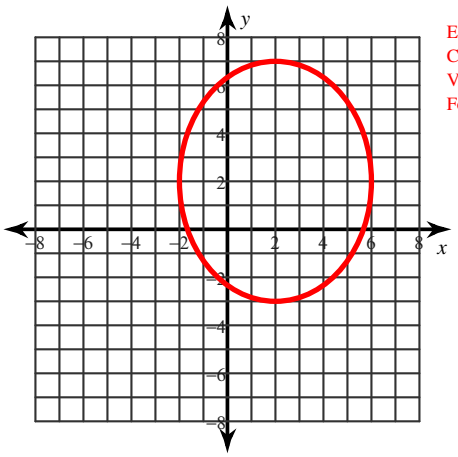
Ellipse
Center: $(3, -3)$
Vertices: $(3, 1), (3, -7)$
Foci: $(3, -3+\sqrt{15}), (3, -3-\sqrt{15})$

2) $\frac{(x+3)^2}{16} + (y-1)^2 = 1$



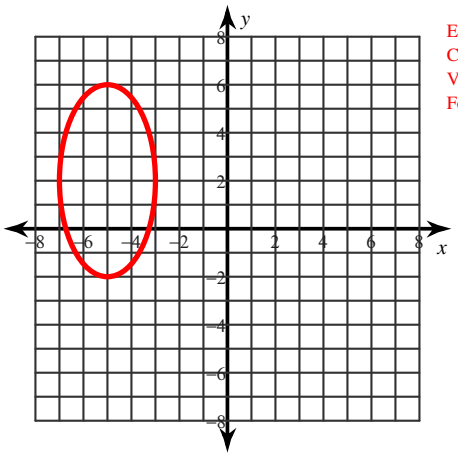
Ellipse
Center: $(-3, 1)$
Vertices: $(1, 1), (-7, 1)$
Foci: $(-3+\sqrt{15}, 1), (-3-\sqrt{15}, 1)$

3) $25x^2 + 16y^2 - 100x - 64y - 236 = 0$



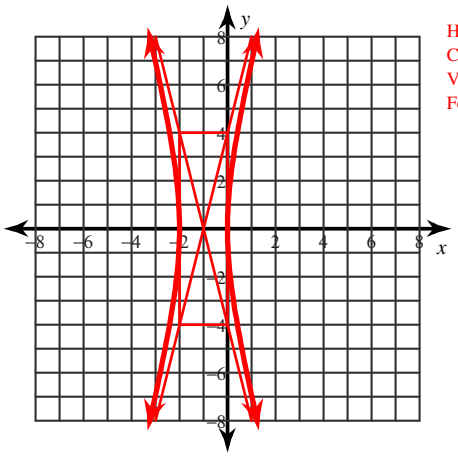
Ellipse
Center: (2, 2)
Vertices: (2, 7), (2, −3)
Foci: (2, 5), (2, −1)

4) $4x^2 + y^2 + 40x - 4y + 88 = 0$



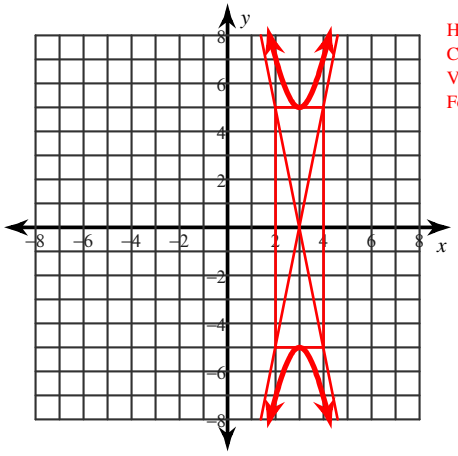
Ellipse
Center: (−5, 2)
Vertices: (−5, 6), (−5, −2)
Foci: $(-5, 2 + 2\sqrt{3})$, $(-5, 2 - 2\sqrt{3})$

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



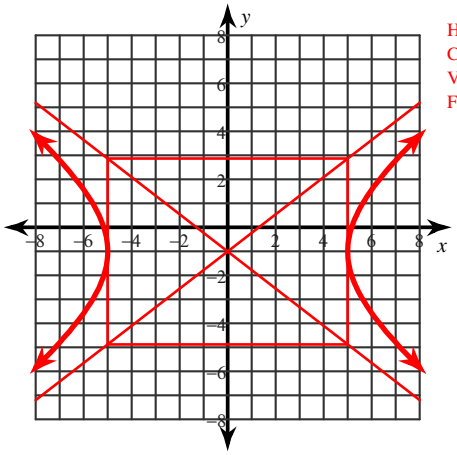
Hyperbola
Center: $(-1, 0)$
Vertices: $(0, 0), (-2, 0)$
Foci: $(-1 + \sqrt{17}, 0), (-1 - \sqrt{17}, 0)$

6) $\frac{y^2}{25} - (x-3)^2 = 1$



Hyperbola
Center: $(3, 0)$
Vertices: $(3, 5), (3, -5)$
Foci: $(3, \sqrt{26}), (3, -\sqrt{26})$

7) $3x^2 - 5y^2 - 10y - 80 = 0$



Hyperbola
Center: $(0, -1)$
Vertices: $(5, -1), (-5, -1)$
Foci: $(2\sqrt{10}, -1), (-2\sqrt{10}, -1)$

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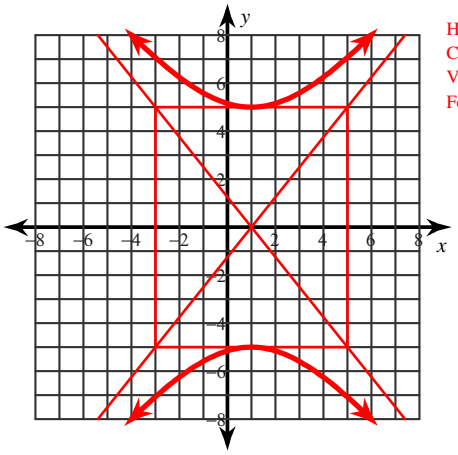

Hyperbola
Center: $(1, 0)$
Vertices: $(1, 5), (1, -5)$
Foci: $(1, \sqrt{41}), (1, -\sqrt{41})$

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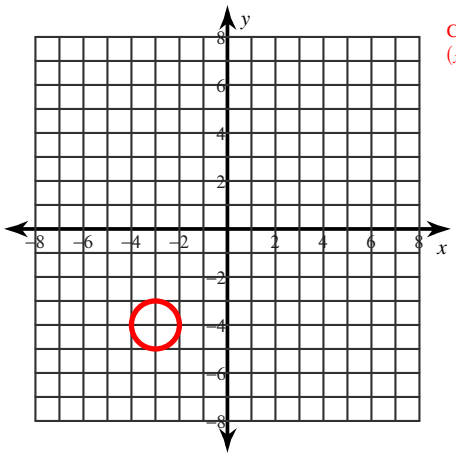
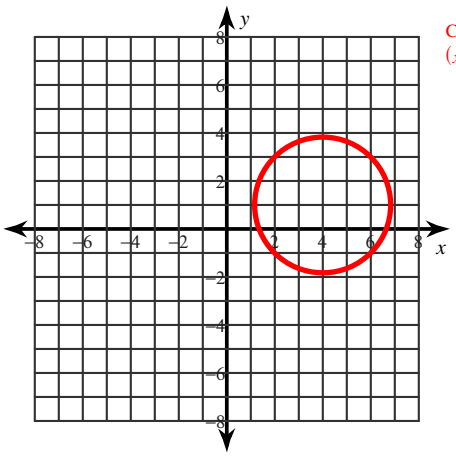


Circle
$(x + 3)^2 + (y + 4)^2 = 1$

10) $x^2 + y^2 - 8x - 2y + 9 = 0$



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

Solve each equation.

11) $\dfrac{|r - 2|}{3} = 2$

$\{8, -4\}$

12) $8 - 8|6n - 5| = -32$ $\left\{\dfrac{5}{3}, 0\right\}$

Factor each completely.

13) $v^2 - 6v - 40$

$(v - 10)(v + 4)$

14) $x^2 - x - 72$

$(x + 8)(x - 9)$

15) $2x^2 + 13x - 24$

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Evaluate each expression.

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2

Expand each logarithm.

18) $\log \frac{a^3}{b^6}$

$3\log a - 6\log b$

Condense each expression to a single logarithm.

19) $18\log x + 6\log y$

$\log \left(y^6 x^{18}\right)$

Solve each equation.

20) $\log_6 -3x + \log_6 2 = 1$

$\{-1\}$