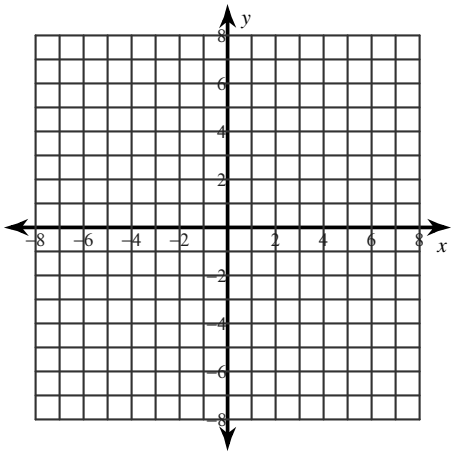
Algebra 2 Name_____

Conic Sections: Circles and Ellipses HW

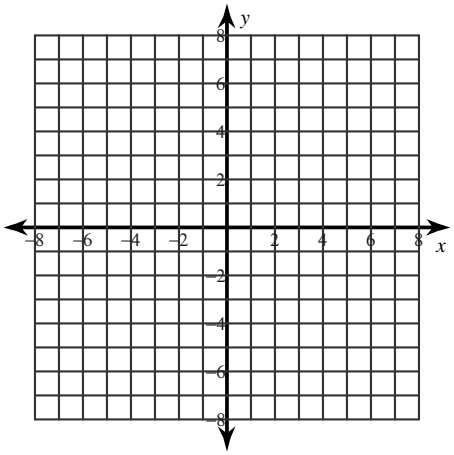
Date_____ Period____

Classify each conic section and sketch its graph. For circles, identify the center and radius.

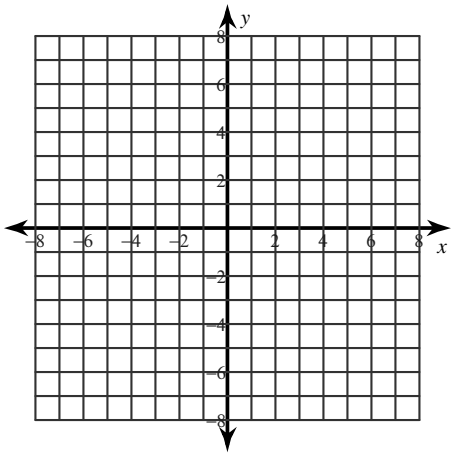
1) $(x-4)^2+(y+3)^2=4$



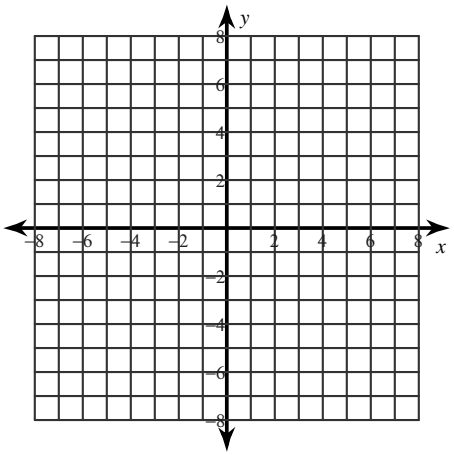
2) $(x+4)^2+(y+2)^2=1$



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

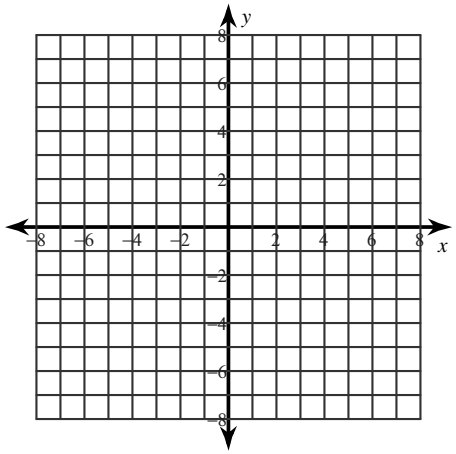


4) $x^2+y^2-4x-8y+15=0$

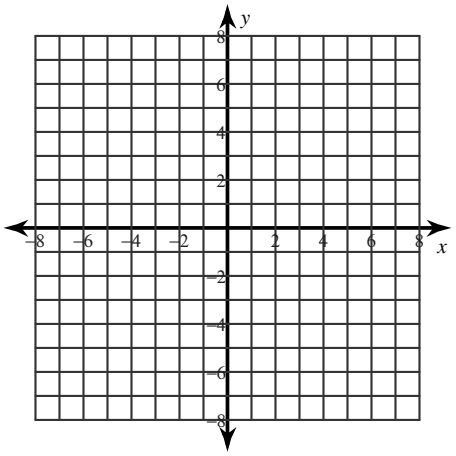


Classify each conic section and sketch its graph. For ellipses and hyperbolas identify the center and foci.

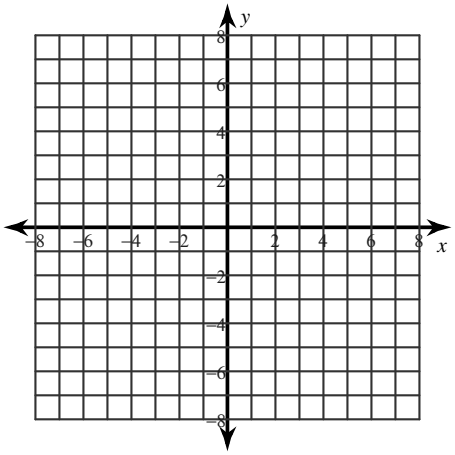
5) $\frac{(x+4)^2}{9} + \frac{\left(y-\frac{1}{2}\right)^2}{4} = 1$



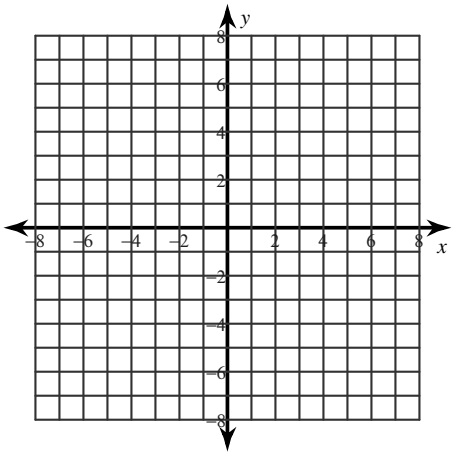
6) $\frac{x^2}{49} + (y+1)^2 = 1$



7) $9x^2 + 4y^2 - 36x - 24y + 36 = 0$



8) $x^2 + 4y^2 + 6x + 40y + 105 = 0$



Simplify each and state the excluded values.

9) $\dfrac{8p + 40}{36p}$

10) $\dfrac{6a^2 - 14a - 20}{10a - 12}$

11) $\dfrac{2}{7} \div \dfrac{9n^3}{10}$

12) $\dfrac{(p - 4)(p - 7)}{10(p - 4)} \cdot \dfrac{2}{7 - p}$

13) $\dfrac{(n+8)(n+6)}{(n+5)(n+6)} \div \dfrac{1}{n+5}$

14) $\dfrac{r^2+6r+5}{r^2+3r-10} \div \dfrac{3r+3}{8}$

Simplify each expression.

15) $\dfrac{p+2}{6p-6} + \dfrac{3}{6p-6}$

16) $\dfrac{6a}{5a} + \dfrac{2}{4}$

17) $\dfrac{6k}{3k-3} + \dfrac{3}{2k-6}$

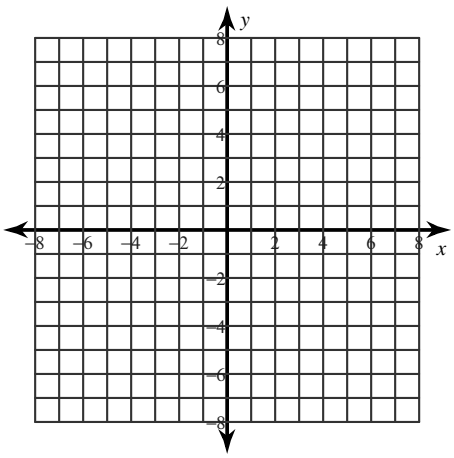
Solve each equation. Remember to check for extraneous solutions.

18) $\dfrac{3}{x} = \dfrac{1}{x} - \dfrac{3x-15}{x}$

19) $\dfrac{v+6}{72v^2-48v-90} = \dfrac{1}{6v+5} - \dfrac{1}{6v-9}$

Graph each function.

20) $f(x) = \dfrac{x-4}{-4x-16}$



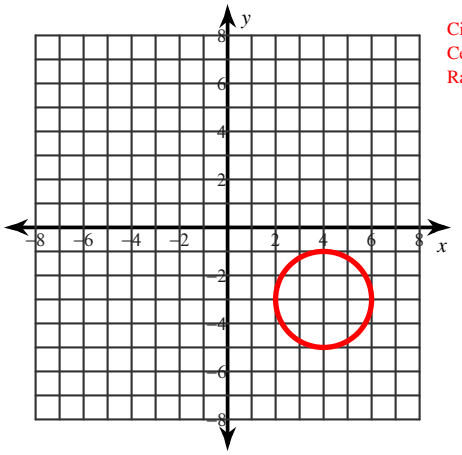
Algebra 2 Name_____

Conic Sections: Circles and Ellipses HW

Date_____ Period____

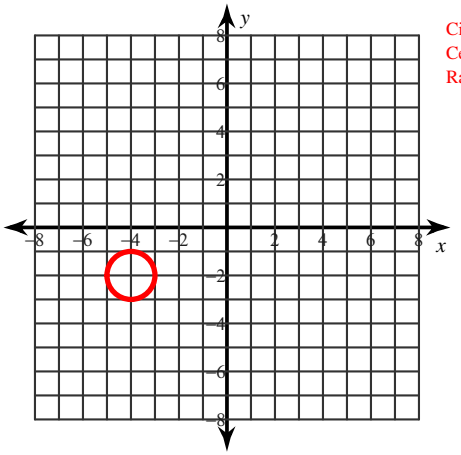
Classify each conic section and sketch its graph. For circles, identify the center and radius.

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



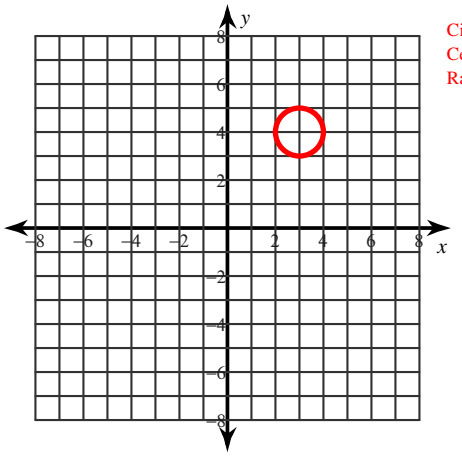
Circle
Center: (4, –3)
Radius: 2

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



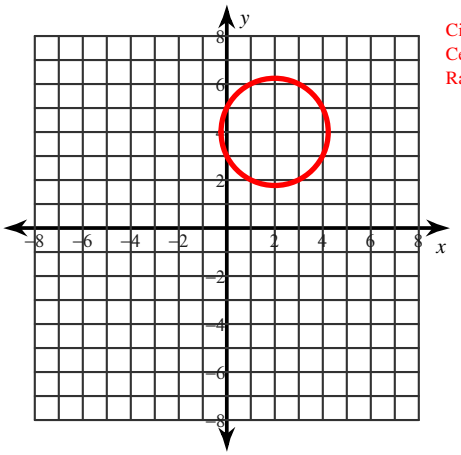
Circle
Center: (–4, –2)
Radius: 1

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



Circle
Center: (3, 4)
Radius: 1

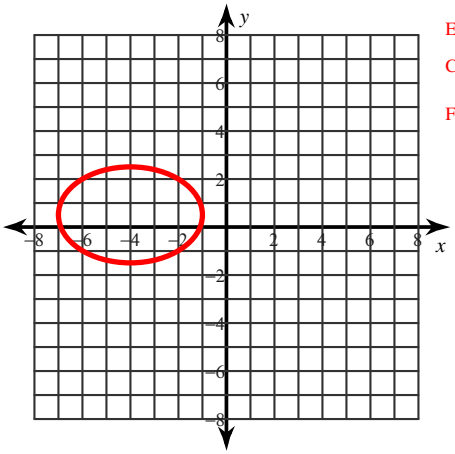
4) $x^2+y^2-4x-8y+15=0$



Circle
Center: (2, 4)
Radius: $\sqrt{5}$

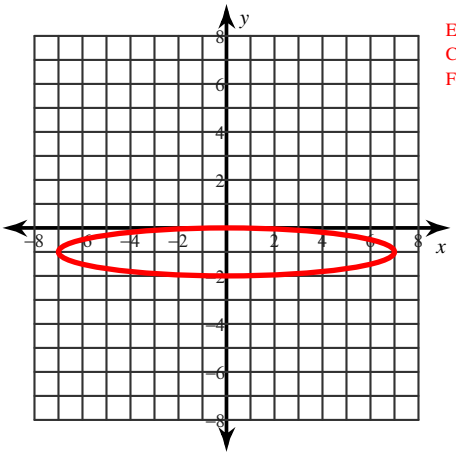
Classify each conic section and sketch its graph. For ellipses and hyperbolas identify the center and foci.

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



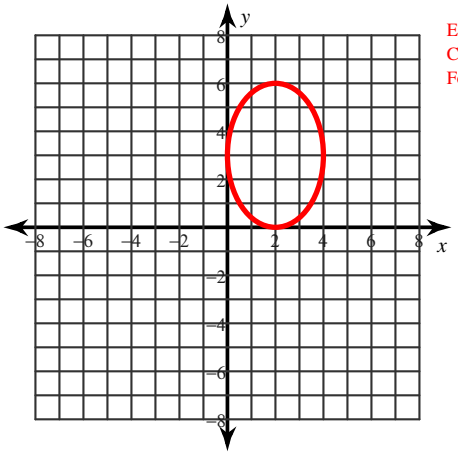
Ellipse
Center: $\left(-4, \frac{1}{2}\right)$
Foci: $\left(-4+\sqrt{5}, \frac{1}{2}\right), \left(-4-\sqrt{5}, \frac{1}{2}\right)$

6) $\dfrac{x^2}{49} + (y+1)^2 = 1$



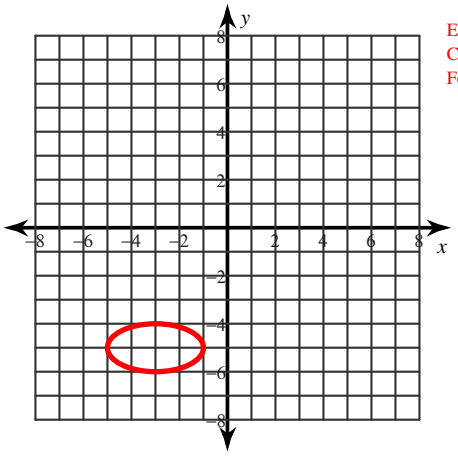
Ellipse
Center: $(0, -1)$
Foci: $(4\sqrt{3}, -1), (-4\sqrt{3}, -1)$

7) $9x^2 + 4y^2 - 36x - 24y + 36 = 0$



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

8) $x^2 + 4y^2 + 6x + 40y + 105 = 0$



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

Simplify each and state the excluded values.

9) $\dfrac{8p + 40}{36p}$

$\dfrac{2(p + 5)}{9p}$; $\{0\}$

10) $\dfrac{6a^2 - 14a - 20}{10a - 12}$

$\dfrac{(3a - 10)(a + 1)}{5a - 6}$; $\left\{\dfrac{6}{5}\right\}$

11) $\dfrac{2}{7} \div \dfrac{9n^3}{10}$ $\dfrac{20}{63n^3}$; $\{0\}$

12) $\dfrac{(p - 4)(p - 7)}{10(p - 4)} \cdot \dfrac{2}{7 - p}$ $-\dfrac{1}{5}$; $\{4, 7\}$

13) $\dfrac{(n+8)(n+6)}{(n+5)(n+6)} \div \dfrac{1}{n+5}$

$n+8;\ \{-5, -6\}$

14) $\dfrac{r^2+6r+5}{r^2+3r-10} \div \dfrac{3r+3}{8}$ $\dfrac{8}{3(r-2)};\ \{-5, 2, -1\}$

Simplify each expression.

15) $\dfrac{p+2}{6p-6} + \dfrac{3}{6p-6}$

$\dfrac{p+5}{6p-6}$

16) $\dfrac{6a}{5a} + \dfrac{2}{4}$

$\dfrac{17}{10}$

17) $\dfrac{6k}{3k-3} + \dfrac{3}{2k-6}$

$\dfrac{4k^2-9k-3}{2(k-1)(k-3)}$

Solve each equation. Remember to check for extraneous solutions.

18) $\dfrac{3}{x} = \dfrac{1}{x} - \dfrac{3x-15}{x}$

$\left\{\dfrac{13}{3}\right\}$

19) $\dfrac{v+6}{72v^2-48v-90} = \dfrac{1}{6v+5} - \dfrac{1}{6v-9}$

$\{-34\}$

Graph each function.

20) $f(x) = \dfrac{x-4}{-4x-16}$