

Simplifying Rational Expressions Day 2 (SRED2)

Simplify each and state the excluded values.

1) $\frac{2n^2 + 13n - 24}{5n^2 + 42n + 16}$

2) $\frac{49x^2 - 7x^3}{7x^2 - 45x - 28}$

3) $\frac{2n^2 + 7n - 49}{2n^2 + 23n + 63}$

4) $\frac{12n + 12}{28n - 40}$

5) $\frac{8 + 4v - 4v^2}{9v^2 - 36v + 36}$

6) $\frac{3n^2 + 30n + 27}{6n^3 + 69n^2 + 135n}$

7) $\frac{18n^3 + 84n^2 + 48n}{2n - 6}$

8) $\frac{3n^2 - 7n + 4}{5n^2 + n - 6}$

Solve each system of equations.

9)
$$\begin{aligned} -x^2 + 4y^2 + 2x - 34y + 15 &= 0 \\ x - 3y + 3 &= 0 \end{aligned}$$

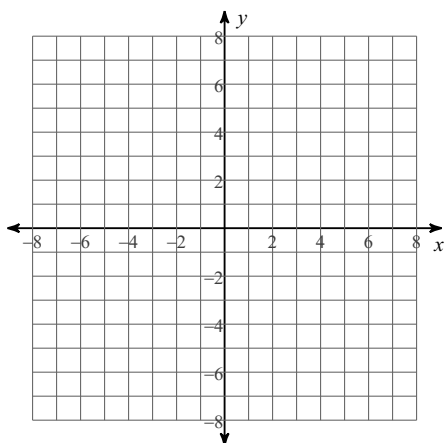
10)
$$\begin{aligned} 4x^2 + 5y^2 + 3x + 72y - 45 &= 0 \\ x - 2y - 3 &= 0 \end{aligned}$$

11)
$$\begin{aligned} 7x^2 + 84x - 16y + 172 &= 0 \\ 7x^2 + 15y^2 + 84x + 29y + 22 &= 0 \end{aligned}$$

12)
$$\begin{aligned} y^2 + 9x + 14y + 49 &= 0 \\ 20x^2 - y^2 + 11x - 14y - 49 &= 0 \end{aligned}$$

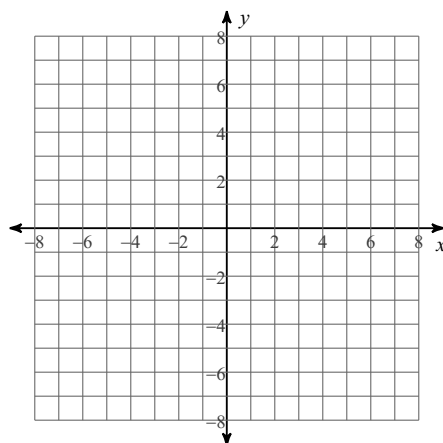
Identify the center and radius of each. Then sketch the graph.

13) $x^2 + y^2 - 4x - 8y + 13 = 0$



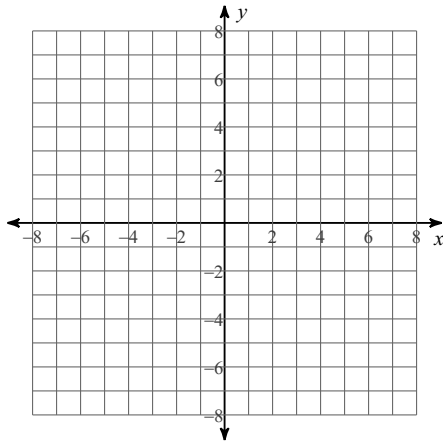
Identify the center, vertices, co-vertices, and foci of each. Then sketch the graph.

14) $3x^2 + 5y^2 + 6x - 72 = 0$



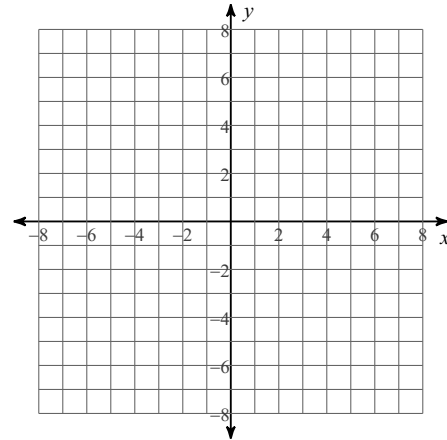
Identify the vertices, foci, and asymptotes of each. Then sketch the graph.

15) $9x^2 - y^2 - 54x + 72 = 0$



Identify the vertex, focus, axis of symmetry, directrix, direction of opening, and min/max value of each. Then sketch the graph.

16) $2x^2 - 24x + y + 75 = 0$



Simplifying Rational Expressions Day 2 (SRED2)

Simplify each and state the excluded values.

1) $\frac{2n^2 + 13n - 24}{5n^2 + 42n + 16}$

$$\frac{2n-3}{5n+2}; \left\{-8, -\frac{2}{5}\right\}$$

3) $\frac{2n^2 + 7n - 49}{2n^2 + 23n + 63}$

$$\frac{2n-7}{2n+9}; \left\{-7, -\frac{9}{2}\right\}$$

5) $\frac{8 + 4v - 4v^2}{9v^2 - 36v + 36}$

$$-\frac{4(1+v)}{9(v-2)}; \{2\}$$

7) $\frac{18n^3 + 84n^2 + 48n}{2n - 6}$

$$\frac{3n(n+4)(3n+2)}{n-3}; \{3\}$$

2) $\frac{49x^2 - 7x^3}{7x^2 - 45x - 28}$

$$-\frac{7x^2}{7x+4}; \left\{7, -\frac{4}{7}\right\}$$

4) $\frac{12n + 12}{28n - 40}$

$$\frac{3(n+1)}{7n-10}; \left\{\frac{10}{7}\right\}$$

6) $\frac{3n^2 + 30n + 27}{6n^3 + 69n^2 + 135n}$

$$\frac{n+1}{n(2n+5)}; \left\{0, -9, -\frac{5}{2}\right\}$$

8) $\frac{3n^2 - 7n + 4}{5n^2 + n - 6}$

$$\frac{3n-4}{5n+6}; \left\{1, -\frac{6}{5}\right\}$$

Solve each system of equations.

9) $-x^2 + 4y^2 + 2x - 34y + 15 = 0$
 $x - 3y + 3 = 0$

$$(-9, -2), (-3, 0)$$

11) $7x^2 + 84x - 16y + 172 = 0$
 $7x^2 + 15y^2 + 84x + 29y + 22 = 0$

$$(-6, -5), (-2, 2), (-10, 2)$$

10) $4x^2 + 5y^2 + 3x + 72y - 45 = 0$
 $x - 2y - 3 = 0$

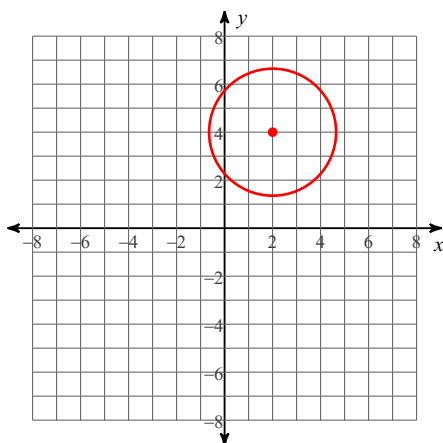
$$(-9, -6), (3, 0)$$

12) $y^2 + 9x + 14y + 49 = 0$
 $20x^2 - y^2 + 11x - 14y - 49 = 0$

$$(0, -7), (-1, -4), (-1, -10)$$

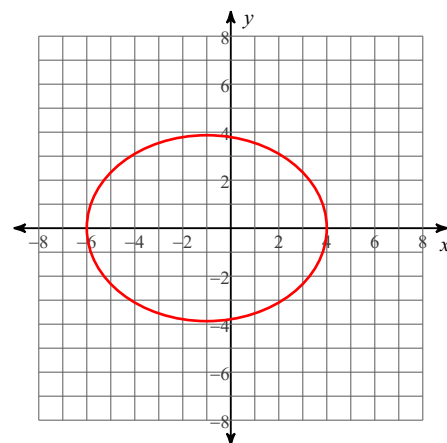
Identify the center and radius of each. Then sketch the graph.

13) $x^2 + y^2 - 4x - 8y + 13 = 0$

Center: (2, 4)
Radius: $\sqrt{7}$

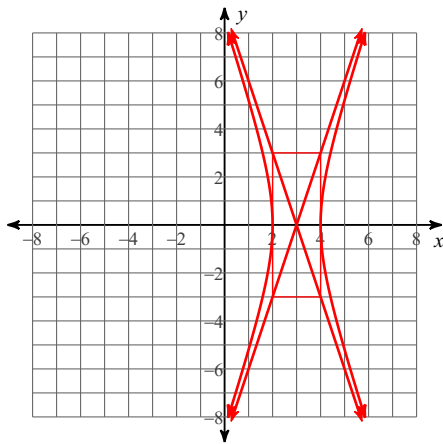
Identify the center, vertices, co-vertices, and foci of each. Then sketch the graph.

14) $3x^2 + 5y^2 + 6x - 72 = 0$

Center: (-1, 0)
Vertices: (4, 0)
(-6, 0)
Co-vertices: (-1, $\sqrt{15}$)
(-1, $-\sqrt{15}$)
Foci: (-1 + $\sqrt{10}$, 0)
(-1 - $\sqrt{10}$, 0)

Identify the vertices, foci, and asymptotes of each. Then sketch the graph.

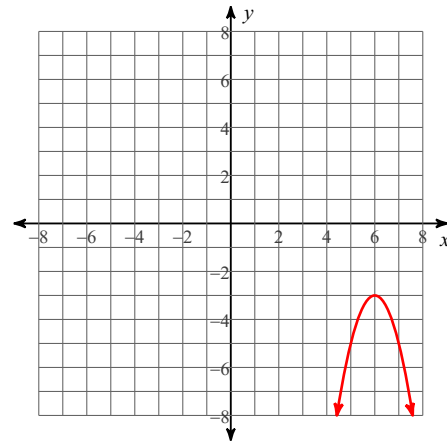
15) $9x^2 - y^2 - 54x + 72 = 0$



Vertices: $(4, 0)$
 $(2, 0)$
 Foci: $(3 + \sqrt{10}, 0)$
 $(3 - \sqrt{10}, 0)$
 Asym.: $y = 3x - 9$
 $y = -3x + 9$

Identify the vertex, focus, axis of symmetry, directrix, direction of opening, and min/max value of each. Then sketch the graph.

16) $2x^2 - 24x + y + 75 = 0$



Vertex: $(6, -3)$
 Focus: $(6, -\frac{25}{8})$
 Axis of Sym.: $x = 6$
 Directrix: $y = -\frac{23}{8}$
 Opens: Down
 Max value = -3