# 11.3 hyperbolas day 2

## warm-up friday (notecard)

$$\frac{(x-6)^2}{9} - \frac{(y-2)^2}{16} = 1$$

center (6,2)
hz ⟩ ⟨
$a = 3 \quad b = 4$
$c^2 = a^2 + b^2$
$9 + 16$
$c = 5$

1. Sketch a graph
2. What's the distance from the center to a focus?

## about me

1. What's your favorite month of the year?
2. Would you rather say something and wish you hadn't, or say nothing and wish you had?

# 11.3 hyperbolas day 2

## extra practice (green page)

1. Re-write the equation for each of the following hyperbolas in standard form.

$3y^2 + 12y - 4x^2 + 24x = 36$

$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$

$3(y^2+4y+\underline{4}) - 4(x^2-6x+\underline{9}) = 36$

$(\frac{4}{2})^2 = (2)^2 \qquad (\frac{-6}{2})^2 = (-3)^2$

$+3(4) \quad +(-4)(9)$

$\frac{3(y+2)^2}{12} - \frac{4(x-3)^2}{12} = \frac{12}{12}$

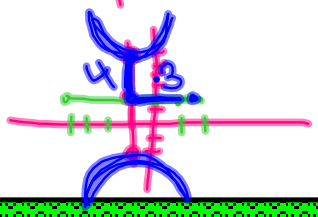
$\frac{(y+2)^2}{4} - \frac{(x-3)^2}{3} = 1$ vert.

2. Write the equation of the hyperbola with Center (-1, 2), the total length of the transverse axis is 8 units and parallel to the y-axis, the total length of the conjugate axis is 6 units and parallel to the x-axis.

major

minor

Draw picture!




½ major = 4 ← vertex on major, vertical

½ minor = 3

$\frac{(y-2)^2}{4^2} - \frac{(x+1)^2}{3^2} = 1$

**11.3 Hyperbolas – Day 2** ALL Name _____

# 1 - 4 Re-write the equation for each of the following hyperbolas in standard form.

1. $x^2 + 6x - 4y^2 + 32y = 59$

2. $3y^2 + 12y - 4x^2 + 24x = 36$

3. $4y^2 - 9x^2 - 16y - 36x - 164 = 0$

4. $x^2 - y^2 - 10x + 6y + 15 = 0$

#7 -10 Write the equation for each hyperbola in standard form.

7. Center (0, 0), the total length of the transverse axis is 4 units along the x-axis, and the total length of the conjugate axis is 6 units along the y-axis.

8. Center (0, 0), the total length of the transverse axis is 8 units along the y-axis, the total length of the conjugate axis is 2 units along the x-axis.

9. Center (-5, 6), the total length of the transverse axis is 10 units and parallel to the x-axis, the total length of the conjugate axis is 12 units and parallel to the y-axis.

10. Center (2, -3), the total length of the transverse axis is 14 units and parallel to the y-axis, the total length of the conjugate axis is 6 units and parallel to the x-axis.