

Daily Agenda

Learning Target: I can graph a hyperbola from its equation.

Homework	Assessments
9.1 Day 3 Worksheet	9.1 Mini Quiz - 4/6 Unit 9 Test - 4/19

You really can change the world if you care enough.
- Marian Wright Edelman

Nov 15-8:24 PM

9.1 Hyperbolas

The set of all points whose difference of the distances from two fixed points (foci) are constant.

Feb 9-11:33 AM

Standard Equation of a Hyperbola

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

$$(r_x)^2 + (r_y)^2 = (r_f)^2$$

Feb 9-11:33 AM

Standard Equation of a Hyperbola

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

Asymptotes
 $y - k = \pm \frac{r_y}{r_x}(x - h)$

Feb 10-1:54 PM

Steps to Graph a Hyperbola

- Plot center
- Find vertices and endpoints
- Sketch box (midpts are V & E)
- Draw asymptotes (and equations)
- Draw branches
- Find foci

Feb 11-9:04 AM

Sketch the graph of the hyperbola

$$\frac{(x+1)^2}{16} - \frac{(y-5)^2}{49} = 1$$

$C(-1, 5)$
 $r_x = 4 \quad V(-5, 5) \quad (3, 5)$
 $r_y = 7 \quad E(-1, 12) \quad (-1, -2)$
 $r_f = \sqrt{65} \quad F(-1 + \sqrt{65}, 5) \quad (-1 - \sqrt{65}, 5)$
 $y - 5 = \pm \frac{7}{4}(x + 1)$

Feb 9-11:33 AM

Rewrite the equation in standard form and then graph.

$$4x^2 + 8x - 9y^2 + 54y - 53 = 168$$

$$4x^2 + 8x - 9y^2 + 54y = 221$$

$$4(x^2 + 2x + 1) - 9(y^2 - 6y + 9) = 221$$

$$\frac{4(x+1)^2}{144} - \frac{9(y-3)^2}{144} = \frac{144}{144} \quad C(-1, 3)$$

$$\frac{(x+1)^2}{36} - \frac{(y-3)^2}{16} = 1 \quad \begin{array}{l} r_x = 6 \\ r_y = 4 \\ r_f = \sqrt{52} \end{array}$$

Feb 9-11:33 AM