

## Assignment-Conic-Hyperbola Equations

Identify the vertices and foci of each.

$$1) \frac{(x-1)^2}{144} - \frac{(y+5)^2}{196} = 1$$

$$2) \frac{(x-10)^2}{49} - \frac{(y-10)^2}{121} = 1$$

Identify the asymptotes, length of the transverse axis, length of the conjugate axis, length of the latus rectum, and eccentricity of each.

$$3) \frac{(y-8)^2}{25} - \frac{(x-7)^2}{64} = 1$$

$$4) \frac{(y-9)^2}{36} - \frac{(x-7)^2}{144} = 1$$

Use the information provided to write the general conic form equation of each hyperbola.

$$5) \frac{x^2}{36} - \frac{y^2}{16} = 1$$

$$6) \frac{x^2}{64} - \frac{y^2}{64} = 1$$

Use the information provided to write the standard form equation of each hyperbola.

7) Vertices:  $(-7, 16), (-7, 2)$   
Conjugate Axis is 12 units long

8) Vertices:  $(-8, 19), (-8, -3)$   
Conjugate Axis is 18 units long

9) Foci:  $(3 + 2\sqrt{26}, 8), (3 - 2\sqrt{26}, 8)$

Asymptotes:  $y = 5x - 7$

$y = -5x + 23$

10) Foci:  $(-6 + \sqrt{109}, -6), (-6 - \sqrt{109}, -6)$

Asymptotes:  $y = \frac{3}{10}x - \frac{21}{5}$

$y = -\frac{3}{10}x - \frac{39}{5}$



## Answers to Assignment-Conic-Hyperbola Equations

- 1) Vertices:  $(13, -5), (-11, -5)$   
 Foci:  $(1 + 2\sqrt{85}, -5), (1 - 2\sqrt{85}, -5)$
- 2) Vertices:  $(17, 10), (3, 10)$   
 Foci:  $(10 + \sqrt{170}, 10), (10 - \sqrt{170}, 10)$
- 3) Asym.:  $y = \frac{5}{8}x + \frac{29}{8}$   
 $y = -\frac{5}{8}x + \frac{99}{8}$
- 4) Asym.:  $y = \frac{1}{2}x + \frac{11}{2}$   
 $y = -\frac{1}{2}x + \frac{25}{2}$
- 5)  $4x^2 - 9y^2 - 144 = 0$
- Transverse Axis: 10 units  
 Conjugate Axis: 16 units  
 Latus Rectum:  $\frac{128}{5}$  units  
 Eccentricity:  $\frac{\sqrt{89}}{5} \approx 1.887$
- Transverse Axis: 12 units  
 Conjugate Axis: 24 units  
 Latus Rectum: 48 units  
 Eccentricity:  $\sqrt{5} \approx 2.236$
- 6)  $x^2 - y^2 - 64 = 0$
- 7)  $\frac{(y-9)^2}{49} - \frac{(x+7)^2}{36} = 1$
- 8)  $\frac{(y-8)^2}{121} - \frac{(x+8)^2}{81} = 1$
- 9)  $\frac{(x-3)^2}{4} - \frac{(y-8)^2}{100} = 1$
- 10)  $\frac{(x+6)^2}{100} - \frac{(y+6)^2}{9} = 1$

