

**Unit 6 Review Assignment: Conic Sections**  
(Show your work on a separate sheet!)

1. Find the distance between the points:

a)  $(-5, 4)$  &  $(10, -3)$

b)  $(-3, 2)$  &  $(-4, -1)$

2. What are the foci of the ellipse with equation:

a)  $\frac{x^2}{25} + y^2 = 1$

b)  $\frac{x^2}{55} + \frac{y^2}{64} = 1$

3. What is the length of the major axis of the ellipse with equation:  $\frac{x^2}{16} + \frac{y^2}{12} = 1$

4. Find the vertices and foci of the hyperbola:  $\frac{(y-8)^2}{16} - \frac{(x+3)^2}{4} = 1$

*eg of asymptotes*

5. Find the equations of the asymptotes of the hyperbola:  $\frac{(x-2)^2}{25} - \frac{(y+3)^2}{16} = 1$

6. Graph the equations:

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

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

c)  $\frac{y^2}{25} - \frac{x^2}{9} = 1$

d)  $(x+2)^2 + (y-3)^2 = 9$

e)  $\frac{x^2}{4} + \frac{y^2}{36} = 1$

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

7. Write each equation in standard form. Identify the conic section.

a)  $x^2 + y^2 - 10x + 2y - 74 = 0$

b)  $5x^2 - 3y^2 = 30$

c)  $16y^2 - x^2 + 2x + 64y = 65$

d)  $10x^2 + 25y^2 = 250$

e)  $x^2 + 4y^2 - 2x - 3 = 0$

8. Solve each system.

a)  $x^2 + y^2 = 5$   
 $y = 3x + 5$

b)  $3x^2 - y^2 = -6$   
 $y = 2x + 1$

9. Write the standard form of the equation for a hyperbola with vertices at  $(1, 2)$  &  $(5, 2)$  and foci at  $(0, 2)$  &  $(6, 2)$ .

Answers to Unit 6 Review

1a)  $\sqrt{274} \approx 16.6$

b)  $\sqrt{10} \approx 3.2$

2a)  $(\pm 2\sqrt{6}, 0)$

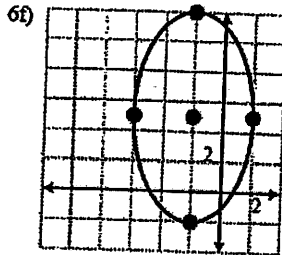
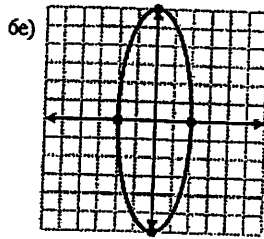
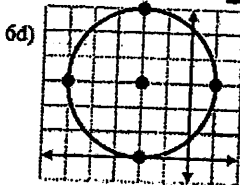
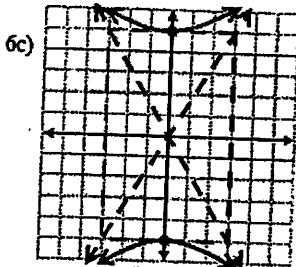
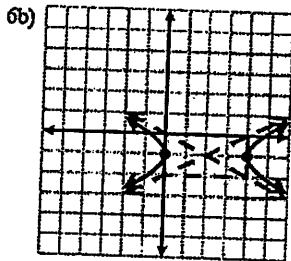
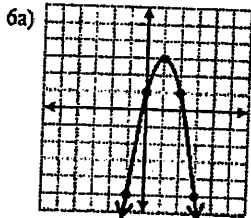
b)  $(0, \pm 3)$

3) 8 units

4) V:  $(-3, 4), (-3, 12)$

F:  $(-3, 8 \pm 2\sqrt{5})$

5)  $y + 3 = \pm \frac{4}{5}(x - 2)$



7a) circle:  $(x-5)^2 + (y+1)^2 = 100$

b) hyperbola:  $\frac{x^2}{6} - \frac{y^2}{10} = 1$

c) hyperbola:  $\frac{(y+2)^2}{8} - \frac{(x-1)^2}{128} = 1$

d) ellipse:  $\frac{x^2}{25} + \frac{y^2}{10} = 1$

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

8a)  $(-2, -1)$  &  $(-1, 2)$

b)  $(1, 3)$  &  $(-5, -9)$

9)  $\frac{(x-3)^2}{4} - \frac{(y-2)^2}{5} = 1$