

Honors Algebra 2  
Unit 11 Conics  
Review Part 1

Identify the conic, put in standard form, find all components.

1.  $9x^2 + 9y^2 + 6x + 18y + 9 = 0$

2.  $4x^2 + 9y^2 - 24x - 36y + 36 = 0$

3.  $9x^2 - 16y^2 - 90x - 64y + 17 = 0$

4.  $x^2 - y^2 - 4x - 2y - 1 = 0$

5.  $3x^2 + 2y^2 - 24x + 42 = 0$

6.  $y - 3x^2 + 6x - 1 = 0$

Find the equation in standard or vertex form given the following:

7. A parabola with Focus (11,-1) and Directrix  $y = 2$ .

8. A parabola with Vertex (2,-3), Dir.  $x = 1$

9. A parabola with Vertex (2,0) and Focus (-1,0).

10. An ellipse with  $F(\pm 4,0)$  and sum of focal radii equal to 18.

11. A hyperbola with Foci  $(-\sqrt{2},0)$  and  $(\sqrt{2},0)$  and asymptotes  $y = x$  and  $y = -x$ .

12. A hyperbola having Foci (0,2) and (0,8) and difference of focal radii is 2.

13. An ellipse having Foci (2,0) and (2,6) and sum of Focal radii 8.

14. A circle with endpoints of the diameter (-1,3) and (-17, 5).

Solve the systems.

15.  $x^2 - y^2 = 1$   
 $x^2 + y^2 = 4$

16.  $9x^2 + 16y^2 = 288$   
 $3x + 4y = 0$

17.  $y = x^2$   
 $4x^2 + y^2 = 12$

Answers for review 1 - 17

1. Circle  $\left(x + \frac{1}{3}\right)^2 + (y + 1)^2 = \frac{1}{9}$

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

3. Hyperbola  $\frac{(x-5)^2}{16} - \frac{(y+2)^2}{9} = 1$

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

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

6. Parabola  $y = 3(x-1)^2 - 2$

7.  $y = -\frac{1}{6}(x-1)^2 + \frac{1}{2}$

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

9.  $x = -\frac{1}{12}y^2 + 2$

10.  $\frac{x^2}{81} + \frac{y^2}{65} = 1$

11.  $x^2 - y^2 = 1$

12.  $\frac{(y-5)^2}{1} - \frac{x^2}{8} = 1$

13.  $\frac{(x-2)^2}{7} + \frac{(y-3)^2}{16} = 1$

14.  $(x+9)^2 + (y-4)^2 = 65$

15.  $\left(\frac{\sqrt{10}}{2}, \frac{\sqrt{6}}{2}\right), \left(-\frac{\sqrt{10}}{2}, \frac{\sqrt{6}}{2}\right), \left(\frac{\sqrt{10}}{2}, -\frac{\sqrt{6}}{2}\right), \left(-\frac{\sqrt{10}}{2}, -\frac{\sqrt{6}}{2}\right)$

16.  $(-4, 3), (4, -3)$

17.  $(\sqrt{2}, 2), (-\sqrt{2}, 2)$

Answers to other side 1 - 12

I. 1.  $M\left(-\frac{5}{2}, \frac{3}{2}\right) d = \sqrt{170}$

2.  $M\left(\frac{13\sqrt{2}}{2}, -\frac{\sqrt{3}}{2}\right) d = \sqrt{165}$

3. B  $(7, -23)$

4.  $\{-2, -10\}$

II. 3) S.F.  $(x+7)^2 + (y+1)^2 = 10$       C(-7,-1)       $r = \sqrt{10}$

4) S.F.  $(x-5)^2 + (y+4)^2 = 25$       C(5, -4)       $r = 5$

5) V.F.  $y = (x+2)^2 - 1$       up      V(-2,-1)       $x = -2$       F  $\left(-2, \frac{-3}{4}\right)$       Dir.  $y = -\frac{5}{4}$

6) V.F.  $x = (y-2)^2 - 9$       Right      V(-9,2)       $y = 2$       F  $\left(-\frac{35}{4}, 2\right)$       Dir.  $x = -\frac{37}{4}$

7) V.F.  $x = -\frac{1}{4}(y+1)^2 - 3$       Left      V(-3,-1)       $y = -1$       F(-4,-1)      Dir.  $x = -2$

8) S.F.  $\frac{x^2}{4} + \frac{(y+3)^2}{1} = 1$       C(0,-3)      F  $(\pm\sqrt{3}, -3)$       V  $(\pm 2, -3)$       CoVert (0,-4), (0, -2)

9) S.F.  $\frac{(x-3)^2}{1} + \frac{(y-1)^2}{36} = 1$       C(3,1)      F  $(3, 1 \pm \sqrt{35})$       V(3,7), (3,-5)      CoV (4,1), (2, 1)

10) S.F.  $\frac{(x-4)^2}{25} + \frac{(y+2)^2}{1} = 1$       C(4,-2)      F  $(4 \pm 2\sqrt{6}, -2)$       V(9,-2), (-1,-2)      CoV (4,-3), (4,-1)

11) S.F.  $\frac{(x-1)^2}{64} - \frac{(y+4)^2}{16} = 1$       C(1,-4)      F  $(1 \pm 4\sqrt{5}, -4)$       V(9,-4), V(-7,-4)       $y + 4 = \pm \frac{1}{2}(x - 1)$

12) S.F.  $\frac{(y-2)^2}{1} - \frac{(x-1)^2}{4} = 1$       C(1,2)      F  $(1, 2 \pm \sqrt{5})$       V(1,3), (1,1)       $y - 2 = \pm \frac{1}{2}(x - 1)$