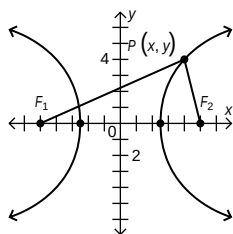


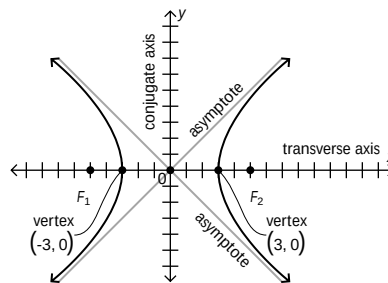
Chapter 7, Review and Practice, page 629

- A mathematical object can be a table of values, a curve, a line, a geometric figure, or a relation defined by an equation.
- A circle is a locus of points equidistant from another point, the centre of the circle.
- A straight line defined as the right bisector of the segment joining those points.
- parabola
- $20x - 2y + 23 = 0$.
- two circles centred on origin, one with radius of 7 ($x^2 + y^2 = 49$) and the other with radius 3 ($x^2 + y^2 = 9$)
- (a) centre (0, 0), radius $\frac{1}{2}$ (b) centre (-8, 3), radius 1
(c) centre $(-\frac{3}{2}, \frac{5}{2})$, radius 3
- $x^2 + y^2 = 100$
- $(x - 2)^2 + (y - 1)^2 = 10$
- $(x + 3)^2 + (y - 4)^2 = 16$
- a semicircle above x-axis with centre (0, 0) and radius 4
- An ellipse is the set or locus of points in a plane such that the sum of the distances from two fixed points to any other point is constant.
- (a) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, where $a > b$
(b) $\frac{x^2}{b^2} + \frac{y^2}{a^2} = 1$ where $a > b$
- (a) major axis 2a units, minor axis 2b units.
(b) major axis 2b units, minor axis 2a units
- $a^2 = b^2 + c^2$
- x-int.: (-5, 0), (5, 0), y-int.: (-8, 0), (8, 0)
- ellipse, vertices (-10, 0) and (10, 0), passing through (0, 5), (0, -5)
- $\frac{x^2}{61} + \frac{y^2}{36} = 1$
- 13.2 m
- Refer to Key Ideas 7.6.
- A parabola is the locus of points in a plane the same distance from a fixed point, called the focus, and a fixed line, called the directrix.
- (a) $x^2 = 4py$ (b) $(x - h)^2 = 4p(y - k)$
(c) $y^2 = 4pk$ (d) $(y - k)^2 = 4p(x - h)$
- 8 units
- (a) focus: (3, 0), vertex: (0, 0), directrix: $x = -3$
(b) focus: (3, 0), vertex: (3, -2), directrix: $y = -2$
- (a) $x^2 = 8y$ (b) $(x - 1)^2 = 8(y - 2)$
- A hyperbola is a set or locus of points, in a plane, whose distances from two fixed points have a constant difference. The two fixed points are called the foci.



- (a) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ (b) $\frac{x^2}{b^2} - \frac{y^2}{a^2} = 1$
- Refer to first and second diagrams in Key Ideas 7.9.
- $\frac{(x + 4)^2}{9} - \frac{(y - 6)^2}{81} = 1$

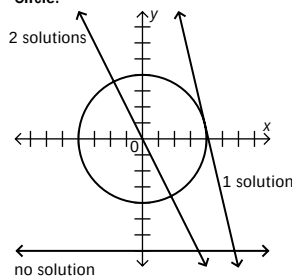
30.



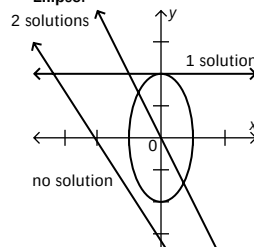
- $\frac{(x - 3)^2}{16} - \frac{(y + 5)^2}{9} = 1$
- First, identify the type of conic by inspecting the coefficients, a and b , of the first two terms. Then, complete the squares to identify the vertices, major/minor axes, foci, or radii of the equations. Finally, determine if there are any transformations.
- You can write any conic in the general form: $ax^2 + by^2 + 2gx + 2fy + C = 0$. To determine the type of conic, look at the sign of ab . If $a = b$, then the conic is a circle; if $a < b$, it is an ellipse; if $a > b$, it is a hyperbola.
- (a) ellipse, $\frac{(x + 1)^2}{9} - \frac{(y - 2)^2}{4} = 1$, vertices (-4, 2), (2, 2); goes through (-1, 0), (-1, 4)
(b) circle, $\frac{(x - 1)^2}{4} - \frac{y^2}{4} = 1$, centre (1, 0), radius 2
(c) hyperbola, $\frac{x^2}{(\frac{25}{18})} - \frac{(y + \frac{1}{6})^2}{(\frac{25}{26})} = -1$, vertices $(0, \frac{2}{3})$, $(0, -1)$
(d) ellipse, $\frac{(x - 6)^2}{34} - \frac{y^2}{17} = 1$, vertices (-4, 3), (4, 3)
(e) hyperbola, $(x + 7)^2 - \frac{(y - 1)^2}{4} = 1$, vertices (-7, 3), (-7, -1)

35.

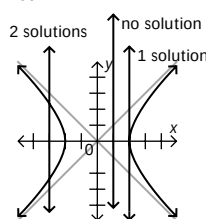
Circle:



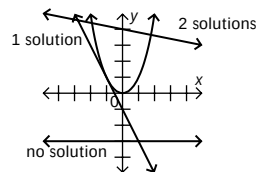
Ellipse:



Hyperbola:



Parabola:



- Graphing a system of equations is not always the best solution to finding intersection points because the solutions are not always easily read from the graph.
- (-4, 2)
- $x^2 + (y + 3)^2 = 41$
- (2, 3), (6, 1)
- (2, -1), (-1, 2)