

## Chapter 2 Graphs in the Cartesian Plane

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Sections:

### Section 2.1 Distance

Video 1 Find the distance between P and Q

a)  $P(-1, 0)$   $Q(4, 2)$

b)  $P(-4, -3)$   $Q(2, 6)$

c)  $P(a, 0)$   $Q(0, a)$

Video 2 Plot the points and show they form a right triangle

$A(-2, 7), B(12, 5), C(10, 9)$

Video 3 Find the midpoint for the line segment formed by these two points

a)  $P(-1, -5)$   $Q(2, -3)$

b)  $P(v - w, t)$   $Q(v + w, t)$

Video 4 The midpoint of the line segment P to Q is  $(1/2)$ . If P is  $(3, 5)$  find Q

### Section 2.2 Intercepts and Symmetry

Video 1 Find the intercepts and graph the equation

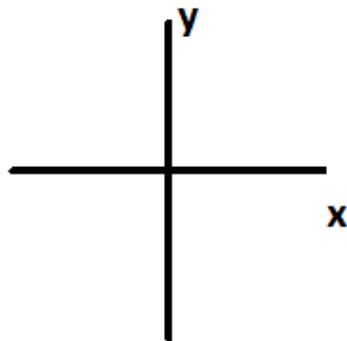
a)  $y = 3x + 6$

b)  $y = -x^2 + 9$

c)  $3x^2 + 2y = 6$

Video 2 Plot the given point, then find a point that is symmetric to the x-axis, y-axis, and the origin

$(3, 2)$



Video 3 Find the intercepts and test for symmetry

- a)  $y = \sqrt[3]{x}$
- b)  $2x^2 + y^2 = 4$
- c)  $y = x^2 - 4x + 3$

Video 4 Find the intercepts and test for symmetry

$$y = \frac{x^4 + 2}{2x^2}$$

Video 5 If  $(a, -7)$  is a point on the graph below, what is  $a$ ?

$$y = x^2 + 8x$$

### Section 2.3 Lines

Video 1 Determine the slope of the line that contains the two given points

- a)  $(-2, 1)$   $(4, -3)$
- b)  $(2, 3)$   $(-1, 3)$
- c)  $(1, -1)$   $(1, 3)$

Video 2 Graph the line having the given slope and point

- a) Slope  $\frac{4}{3}$ ; point  $(-6, -2)$
- b) Slope  $-2$ ; point  $(-2, 3)$

Video 3 Find the equation of the line, given the following

- a) Slope  $2$ ; point  $(-2, 3)$
- b)  $(-3, 4)$  and  $(1, 5)$
- c) Slope  $= \frac{1}{3}$ ; y-intercept  $= 4$

Video 4 Find the equation of the line, given the following

- a) The slope is undefined; point  $(2, -3)$
- b) The line is horizontal; point  $(1, 5)$

Video 5 Find the equation of the line, given the following

- a) Parallel to the line  $3x - y = -1$  and has the point  $(1, 2)$
- b) Perpendicular to the line  $2y = x + 4$  and has the point  $(1, 3)$

Video 6 Find the slope and y-intercept of each line

- a)  $-x + 3y = 9$
- b)  $5x + 2y = 10$
- c)  $y = 3$
- d)  $x = -4$

Video 7 Are the lines parallel, perpendicular, or neither?

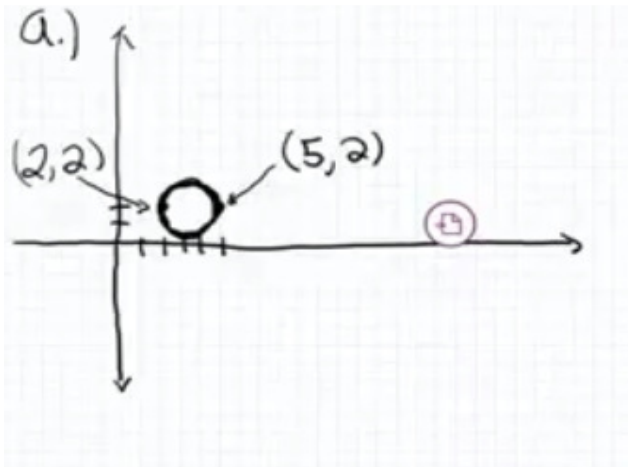
$$y = 3x + 7$$

- a)  $y = \frac{-1}{3}x - 2$
- b)  $y = 2x + 5$
- b)  $y = 2x - 2$
- c)  $y = 4x - 3$
- c)  $y = -4x + 2$

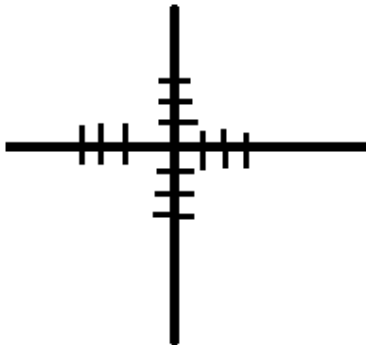
Section 2.4 Circles

Video 1 Find the standard form of the equation for the circle

a.



b. Center (2, 3) and Tangent to the y-axis



- Video 2 Find the standard form of the equation for the circle
- a)  $r = 3; (h, k) = (-2, 1)$
  - b)  $r = \frac{1}{4}; (h, k) = \left(0, \frac{1}{2}\right)$
- Video 3 Find the center and radius of each circle and any intercepts
- a)  $x^2 + (y - 2)^2 = 1$
  - b)  $3(x + 1)^2 + 3(y - 2)^2 = 9$
- Video 4 Find the center and radius of each circle and any intercepts
- a)  $x^2 + y^2 - 4x - 2y - 15 = 0$
  - b)  $x^2 + y^2 - x = 0$
- Video 5 Find the center and radius of each circle and any intercepts
- $$3x^2 + 3y^2 - 18x + 12y - 36 = 0$$
- Video 6 Find the standard form of the equation
- a) A circle with center  $(-3, 1)$  which is tangent to the y-axis
  - b) A circle with diameter end points  $(4, 3)$  and  $(0, 1)$