Precalculus Worksheet

Topic: Coordinate Geometry

Instructions

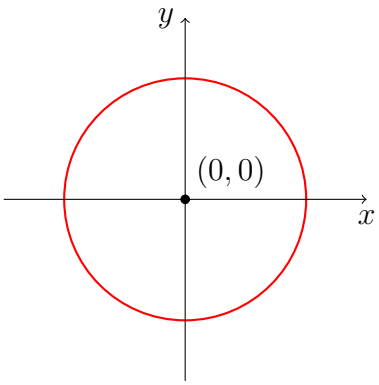
Answer the following problems. Use diagrams and show all calculations clearly.

Lines

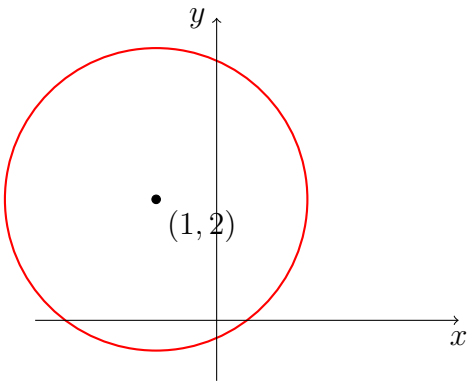
1. **Find the equation of the line passing through the given points:**
   i. $(2, 3)$ and $(5, -1)$
   ii. $(-4, 7)$ and $(1, 3)$
   iii. $(0, -2)$ and $(4, 6)$
2. **Convert the following equations to slope-intercept form and graph them:**
   i. $2x - y = 4$
   ii. $x + 3y = 6$
   iii. $4y + 2x = 8$
3. **Determine the slope of the lines and graph them:**
   i. $y = 2x + 1$
   ii. $y = -\frac{1}{3}x + 2$
   iii. $x = -2$

Circles

1. **Find the equation of the circle with the given center and radius:**
   i. Center $(0, 0)$, radius 5
   ii. Center $(3, -4)$, radius 7
   iii. Center $(-2, 5)$, radius 3
2. **Convert the following circle equations to standard form:**
   i. $x^2 + y^2 + 4x - 6y + 9 = 0$
   ii. $x^2 + y^2 - 2x + 8y - 8 = 0$
   iii. $x^2 + y^2 + 6x + 2y - 15 = 0$
3. **Graph the circles:**
   i. $x^2 + y^2 = 25$
   ii. $(x - 3)^2 + (y + 2)^2 = 16$
   iii. $(x + 4)^2 + (y - 1)^2 = 9$
4. **Find the equation of the circle shown in the figure.**



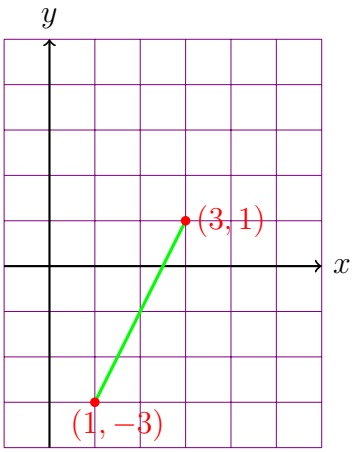
a.



b.

Distance and Midpoints

1. **A pair of points is graphed.**
   i. Find the distance between them.
   ii. Find the midpoint of the segment that joins them.



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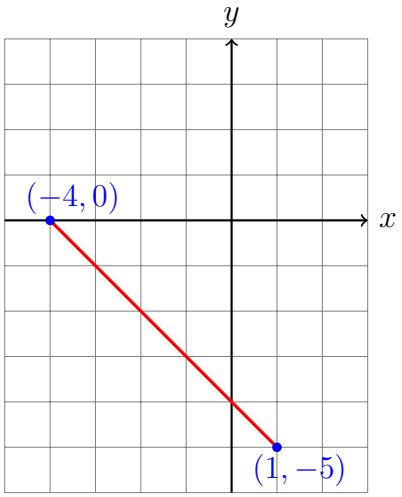

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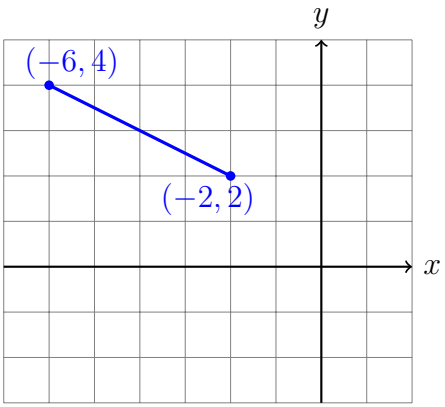

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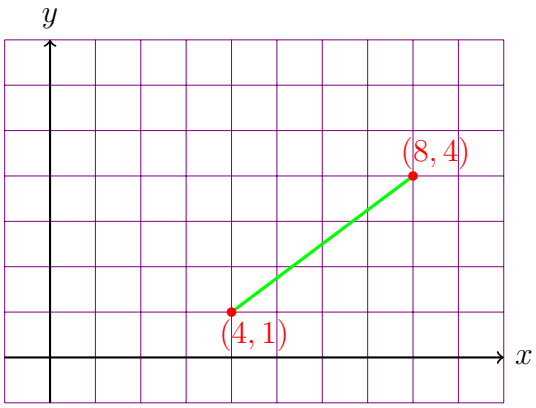

d.

2. **Calculate the distance between the following points:**

   i. $(1, 2)$ and $(4, 6)$

   ii. $(-3, 5)$ and $(6, -2)$

   iii. $(0, 0)$ and $(7, 9)$

3. **Find the midpoint of the line segment joining:**

   i. $(1, 5)$ and $(4, -2)$

   ii. $(-3, 7)$ and $(6, -1)$

   iii. $(0, 0)$ and $(8, 10)$

Multiple Choice Questions

1. What is the slope of the line passing through $(2, 3)$ and $(5, -1)$?

   (a) $-\frac{4}{3}$

   (b) $\frac{3}{4}$

(c) 2

(d) -2

2. What is the equation of a circle with center $(0, 0)$ and radius 3?

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

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

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

   (d) $x^2 + y^2 = 1$

3. What is the midpoint of the line segment joining $(1, 2)$ and $(3, 6)$?

   (a) $(2, 4)$

   (b) $(4, 8)$

   (c) $(1, 1)$

   (d) $(0, 0)$
