Geometry B Live Lesson Class

U7L5 – Circles in the Coordinate Plane (Ch 12-5 in textbook)

CONNECTIONS ACADEMY®

Agenda

1. Review topics and problems from Unit 7, Lesson 5 – Circles in the Coordinate Plane.

2. Use the 2-column note system to take better notes in math class. Bring your math notebook and pen or pencil to each math LiveLesson class.

2-Column Notes Template

1. Announcements/To Do's	1. Write down important details.
2. School-Wide Learner Outcomes	2. What are you going to work on this week?
3. LL Objectives	
4. Vocabulary words	4. Definitions (fill in as we go)
5. Problems	5. Steps to solving problems
6. Summary (End of class)	6. 1 or 2 sentences about the LL class.

Reminders and To – Do's

Information

1. Complete 1 math lesson per day.

2. Check your WebMail every day

3. Be prepared to spend 4 - 6 hours per day on schoolwork.

4. Remind your Learning Coach to take daily attendance

What to do

1. Go to your Planner in Connexus to find the math lesson for the day

2. Go to Connexus to find WebMail

3. Complete lessons for the day from your Planner. Do not get behind on lessons.

4. Have your Learning Coach log into Connexus daily.

Reminders and To – Do's

Information

What to do

5. Go to the Message Board first for information about our math class.

6. Contact Mr. Elizondo for math questions.

6. Call (559) 549 - 3244 and leave a voicemail if call is not answered.

Remember: You need at least 2 phone calls with Mr. Elizondo per semester.

Make an appointment at: https://elizondo.youcanbook.me

Send a WebMail

U7L5 – California Common Core State Standards

- HSG-GPE.A.1: Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

U7L5 – Objectives

- Write the equation of a circle

- Find the center and radius of a circle

U7L5 – Vocabulary

- standard form of an equation of a circle

U7L5 – Circles in the Coordinate Plane

Review of Coordinate Formulas

Midpoint Formula

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Find the midpoint of (-5, 8) and (2, 4)

$$\left(\frac{-5 + 2}{2}, \frac{8 + 4}{2}\right)$$

$$\left(\frac{-3}{2}, \frac{12}{2}\right)$$

$$(-\mathbf{1.5}, \mathbf{6})$$

Find the distance between (2, 4) and (8, 2)

$$d = \sqrt{(2 - 8)^2 + (4 - 2)^2}$$

$$d = \sqrt{(-6)^2 + (2)^2}$$

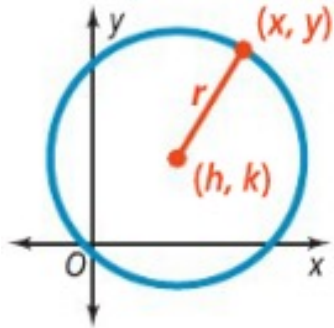$$d = \sqrt{36 + 4}$$

$$d = \sqrt{40}$$

$$d = 2\sqrt{10}$$

U7L5 – Circles in the Coordinate Plane

Equation of a Circle

Theorem 12-16

An equation of a circle with center *(h, k)* and radius *r* is

$$(x - h)^2 + (y - k)^2 = r^2$$

Write the equation of each circle.

a. Center (3, 5); radius 6

$$(x - h)^2 + (y - k)^2 = r^2$$

$$(x - 3)^2 + (y - 5)^2 = 6^2$$

$$(x - 3)^2 + (y - 5)^2 = 36$$

b. Center (-2, -1); radius $\sqrt{2}$
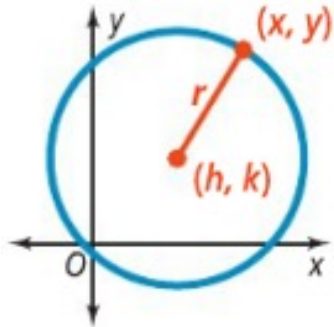
$$(x - (-2))^2 + (y - (-1))^2 = (\sqrt{2})^2$$

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

Equation of a Circle

Theorem 12-16

An equation of a circle with center *(h, k)* and radius *r* is

$$(x - h)^2 + (y - k)^2 = r^2$$

What is the standard equation of the circle with diameter AB? A (3, 0), B(7, 6)

1. Find midpoint (center of diameter)

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) \quad \left(\frac{3 + 7}{2}, \frac{0 + 6}{2}\right) = \left(\frac{10}{2}, \frac{6}{2}\right) = (5, 3)$$

2. Find radius (distance from center to circle)

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \quad A(3,0), Center(5,3)$$

$$r = \sqrt{(5 - 3)^2 + (3 - 0)^2}$$

$$r = \sqrt{(2)^2 + (3)^2}$$

$$r = \sqrt{4 + 9} \qquad r = \sqrt{13}$$

3. Create equation of a circle

$$(x - h)^2 + (y - k)^2 = r^2$$

$$(x - 5)^2 + (y - 3)^2 = (\sqrt{13})^2$$

$$(x - 5)^2 + (y - 3)^2 = 13$$

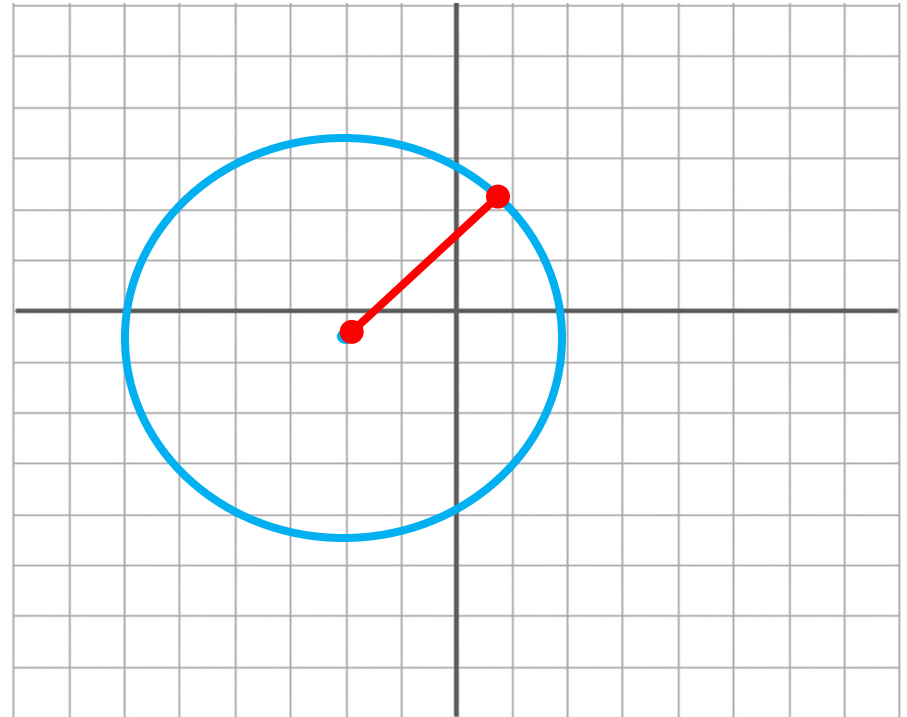## Graphing Circles

Find the center and radius and graph:

$$(x+2)^2 + (y-0.5)^2 = 16$$

$$Center \ (-2, 0.5)$$
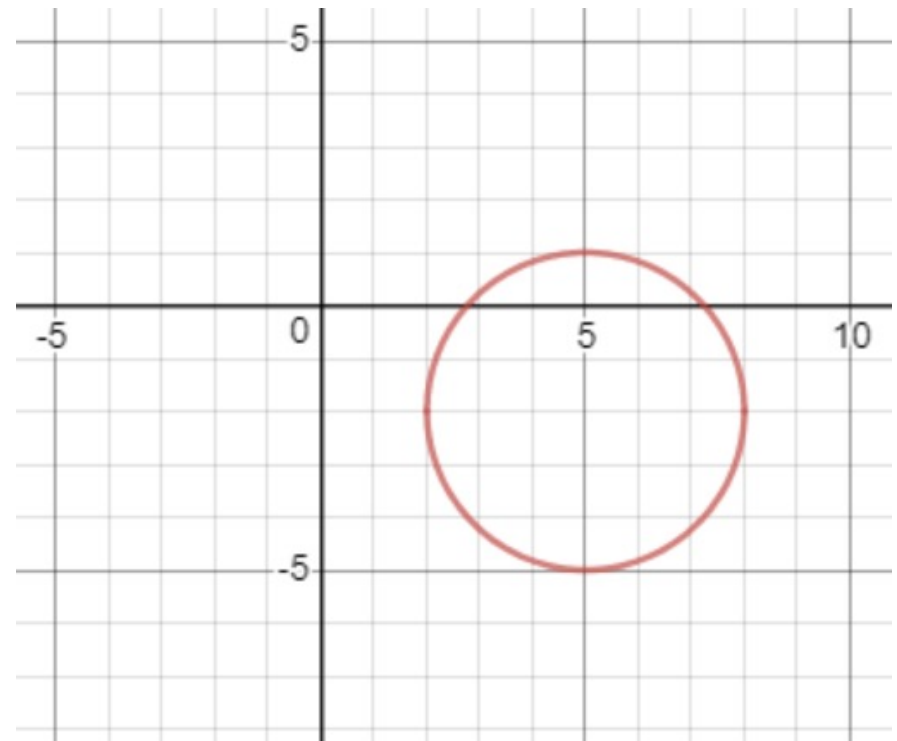
$$r^2 = 16, so \ r = 4$$

Graphing Circles

What is the equation of the circle?

$Center\ (5, -2), radius = 3$

$(x - h)^2 + (y - k)^2 = r^2$

$(x - 5)^2 + (y + 2)^2 = 3^2$

$\mathbf{(x - 5)^2 + (y + 2)^2 = 9}$

U7L5 – To Know for the Quiz

- Finding angle measures in circles with secants, tangents, etc.

- Finding segment lengths in circles with secants, tangents, etc.

- Equation of a circle in the coordinate plane

Questions?

- Check the Message Board first

- Send a WebMail

- You can also make an appointment at https://elizondo.youcanbook.me

- You can also call me at (559) 549-3244. If I'm not available to answer your call, please leave a voicemail with your full name and phone number.