

7.3

This assignment is past the original due date of Fri 02/12/2021 11:59 pm. You have used a LatePass. Due in 5 hours, 28 minutes. Due Sun 02/14/2021 11:59 pm

Instructional videos on Mod. 7, Inv. 3 ([Sine and Cosine Functions](#)) and ([Graphing Sine and Cosine](#)) found in the Pathways PreCalculus online textbook. If you are not logged into rationalreasoning.net, you will be asked to log in prior to accessing the videos.

TIP: Picture First! For many questions, it is helpful to visualize what is happening, so try drawing a picture for each question before trying to answer it.

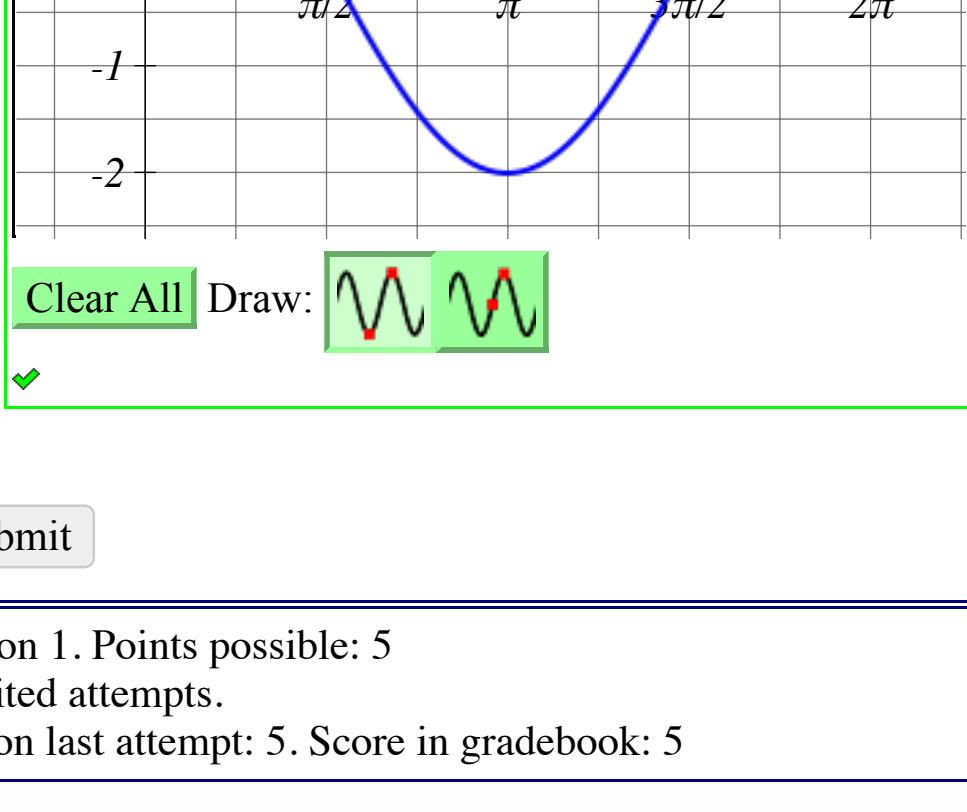
✓

A point starts at the location $(2, 0)$ and moves counter-clockwise along a circular path with a radius of 2 units that is centered at the origin of an x - y plane. An angle with its vertex at the circle's center has a measure of θ radians and subtends the path the point travels. Let x represent the point's x -coordinate. (Draw a diagram of this to make sure you understand the context!)

a. Complete the following statements.

- As θ varies from 0 to $\frac{\pi}{2}$, x varies from to units.
- As θ varies from $\frac{\pi}{2}$ to π , x varies from to units.
- As θ varies from π to $\frac{3\pi}{2}$, x varies from to units.
- As θ varies from $\frac{3\pi}{2}$ to 2π , x varies from to units.

b. Based on your answers to part a, sketch a graph of the relationship between x and θ . (Represent θ on the horizontal axis and x on the vertical axis.)

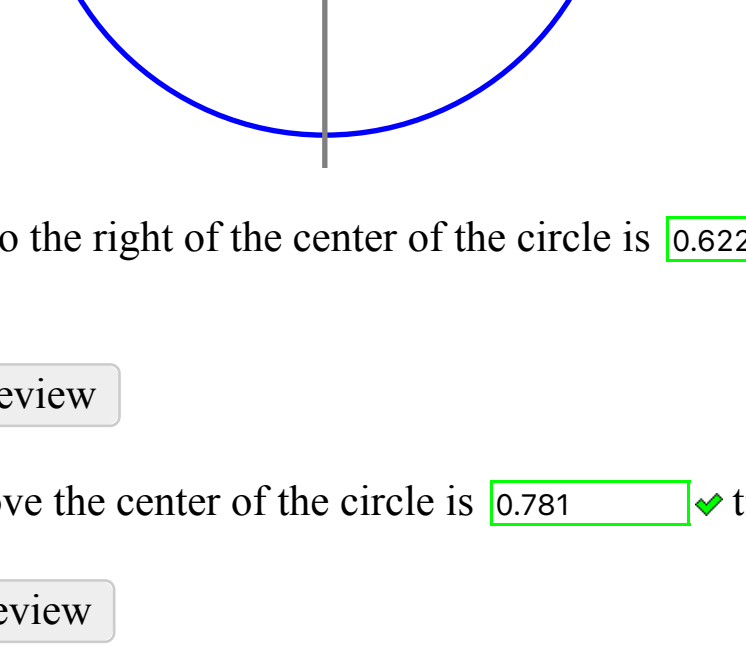


Submit

Question 1. Points possible: 5
Unlimited attempts.
Score on last attempt: 5. Score in gradebook: 5

✓

Consider the angle shown below that has a radian measure of θ . A circle with a radius of 2.7 cm is centered at the angle's vertex, and the terminal point is shown.



a. The terminal point's horizontal distance to the right of the center of the circle is times as large as the radius of the circle, and therefore:

$\cos(\theta) =$ Preview

b. The terminal point's vertical distance above the center of the circle is times as large as the radius of the circle, and therefore:

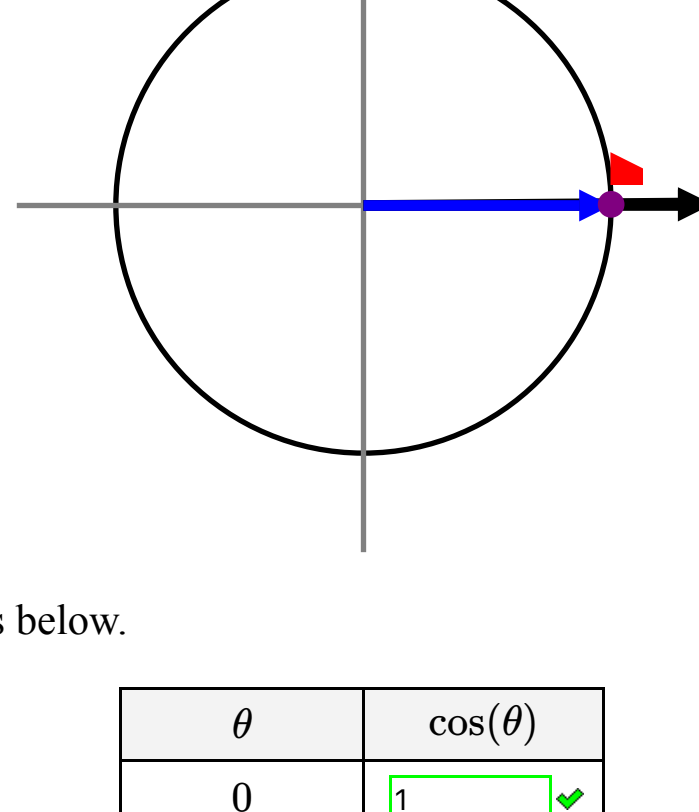
$\sin(\theta) =$ Preview

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Question 2. Points possible: 4
Unlimited attempts.
Score on last attempt: 4. Score in gradebook: 4

✓

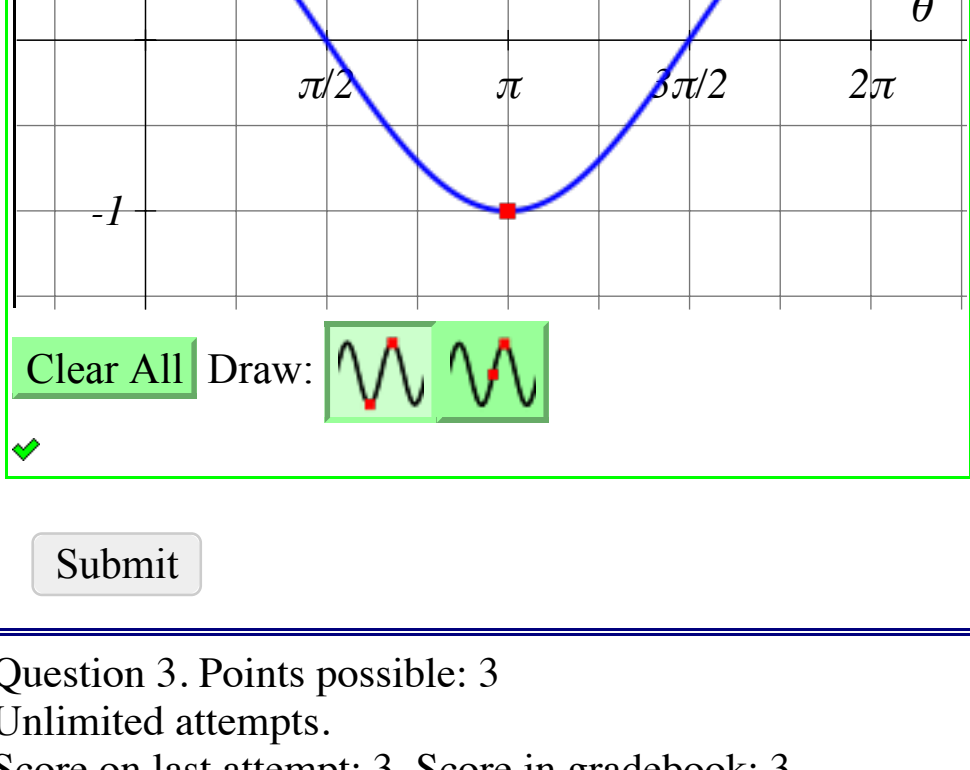
You can drag the terminal point in the applet below to adjust the openness of the given angle. As you drag the point, the angle's measurement in radians (θ) will be shown.



By using the applet above, fill in the table of values below.

θ	$\cos(\theta)$
0	<input type="text" value="1"/>
$\frac{\pi}{2} \approx 1.57$	<input type="text" value="0"/>
$\pi \approx 3.14$	<input type="text" value="-1"/>
$\frac{3\pi}{2} \approx 4.71$	<input type="text" value="0"/>
$2\pi \approx 6.28$	<input type="text" value="1"/>

Now, sketch a graph of $h = \cos(\theta)$ based on the information in the table above.

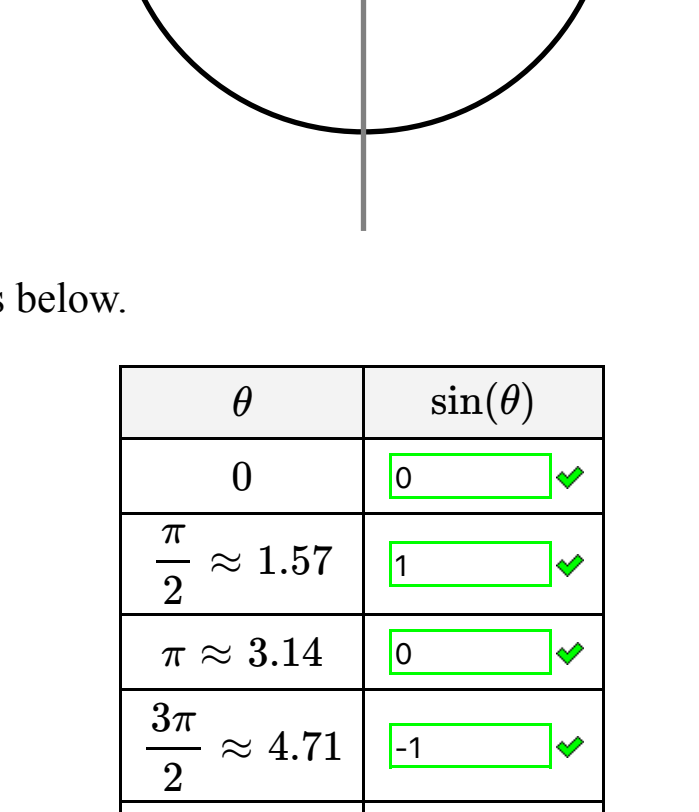


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Question 3. Points possible: 3
Unlimited attempts.
Score on last attempt: 3. Score in gradebook: 3

✓

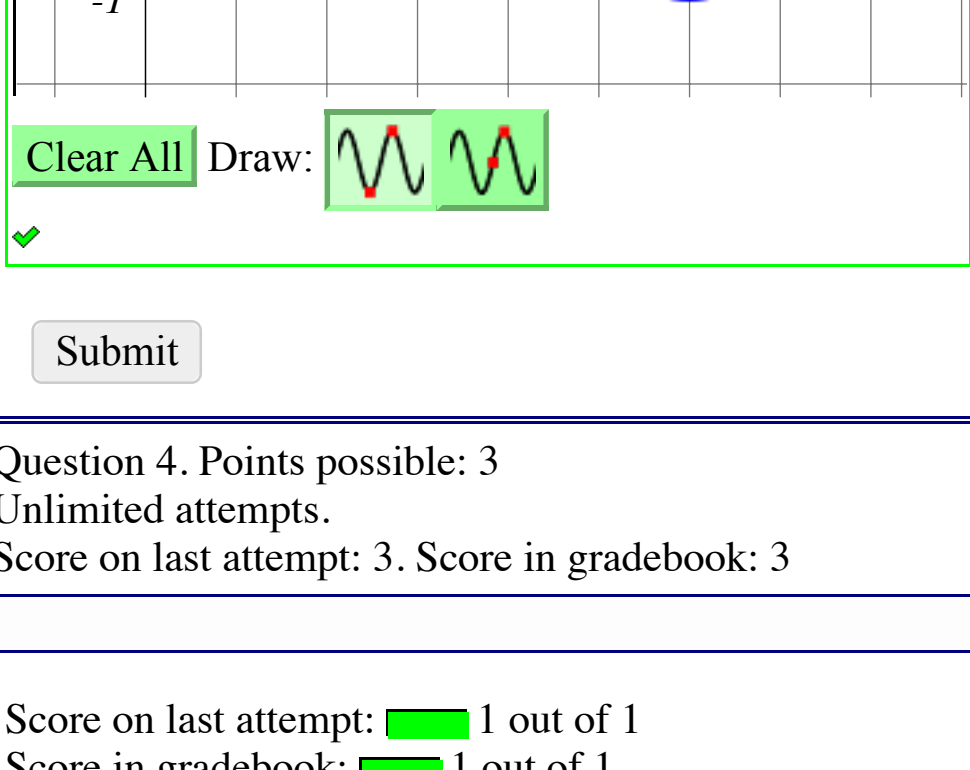
You can drag the terminal point in the applet below to adjust the openness of the given angle. As you drag the point, the angle's measurement in radians (θ) will be shown.



By using the applet above, fill in the table of values below.

θ	$\sin(\theta)$
0	<input type="text" value="0"/>
$\frac{\pi}{2} \approx 1.57$	<input type="text" value="1"/>
$\pi \approx 3.14$	<input type="text" value="0"/>
$\frac{3\pi}{2} \approx 4.71$	<input type="text" value="-1"/>
$2\pi \approx 6.28$	<input type="text" value="0"/>

Now, sketch a graph of $v = \sin(\theta)$ based on the information in the table above.



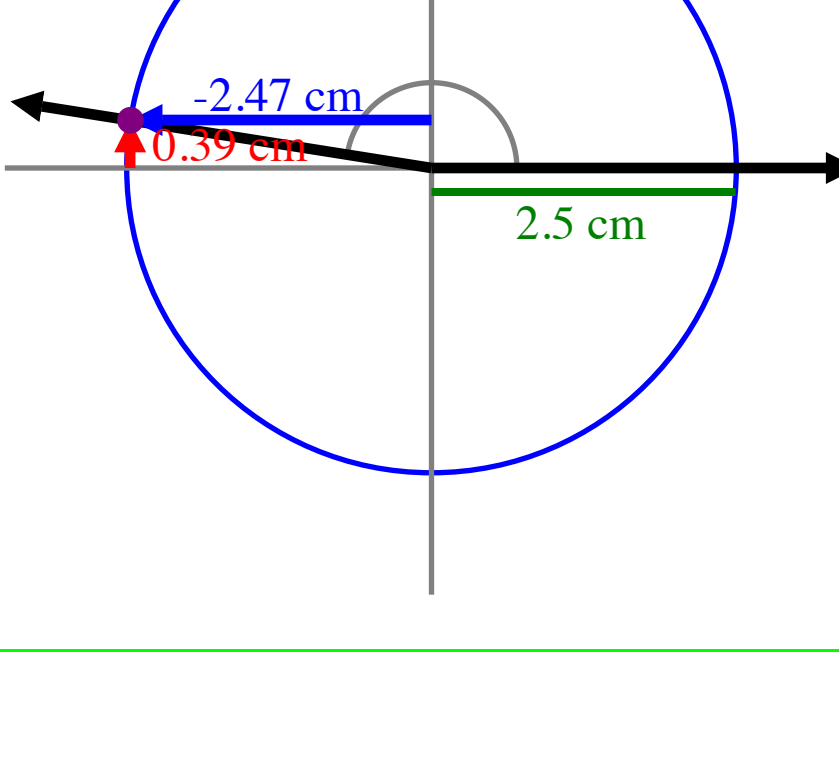
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Question 4. Points possible: 3
Unlimited attempts.
Score on last attempt: 3. Score in gradebook: 3

✓

Score on last attempt: out of 1
Score in gradebook: out of 1

Let θ represent the radian measure of the angle below. By dragging the terminal point in the applet, adjust the given angle so that $\cos(\theta) \approx -0.99$ and $\sin(\theta) \approx 0.14$.



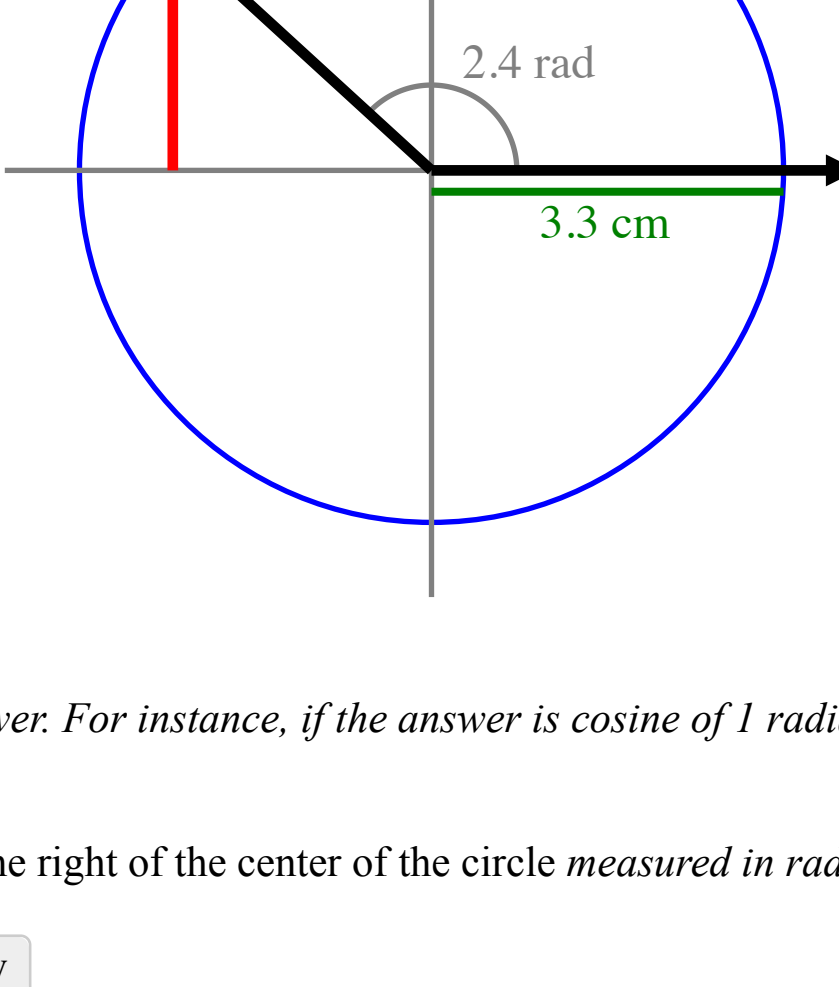
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Question 5. Points possible: 1
Unlimited attempts.
Score on last attempt: 1. Score in gradebook: 1

C

Score on last attempt: out of 4
Score in gradebook: out of 4

Consider the angle shown below that has a radian measure of 2.4 radians. A circle with a radius of 3.3 cm is centered at the angle's vertex, and the terminal point is shown.



Note: Sine and cosine may appear in your answer. For instance, if the answer is cosine of 1 radian, you can write $\cos(1)$.

a. What is the terminal point's distance to the right of the center of the circle *measured in radius lengths*?

radii Preview

b. What is the terminal point's distance to the right of the center of the circle *measured in cm*?

cm Preview

c. What is the terminal point's distance above the center of the circle *measured in radius lengths*?

radii Preview

d. What is the terminal point's distance above the center of the circle *measured in cm*?

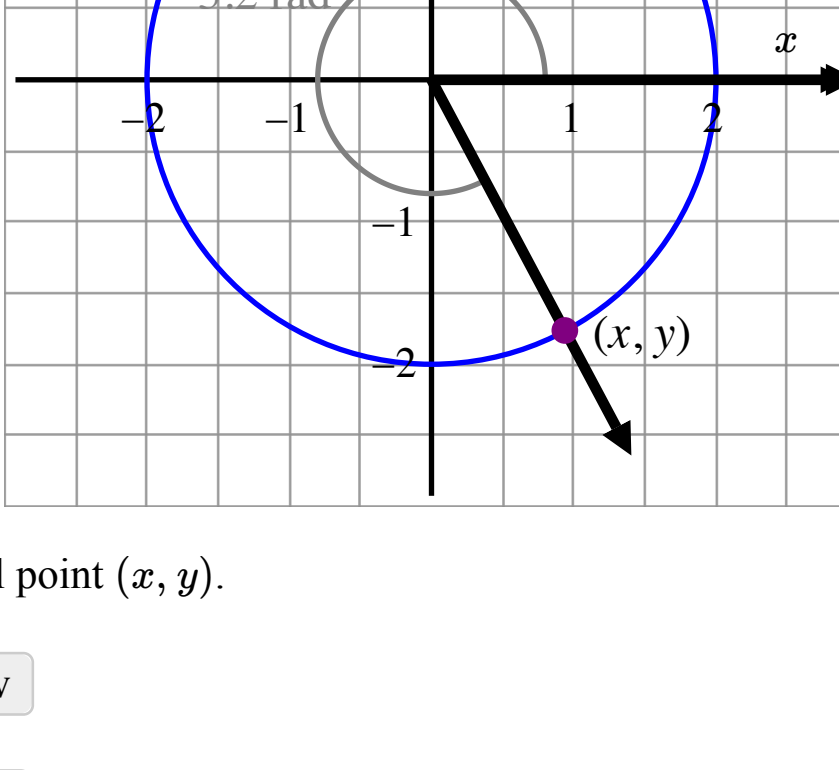
cm Preview

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Question 6. Points possible: 4
Unlimited attempts.
Score on last attempt: 0. Score in gradebook: 0

✓

The angle below has a measure of 5.2 radians.



Determine the exact coordinates of the terminal point (x, y) .

$x =$ Preview

$y =$ Preview

Submit

Question 7. Points possible: 2
Unlimited attempts.
Score on last attempt: 2. Score in gradebook: 2

✓

Isaac is skiing on a circular ski trail that has a radius of 0.9 km. Isaac starts at the 3-o'clock position and travels 2.1 km in the counter-clockwise direction.

a. How many radians does Isaac sweep out?

radians Preview

b. When Isaac stops skiing, how many km is Isaac to the right of the center of the ski trail?

km Preview

c. When Isaac stops skiing, how many km is Isaac above of the center of the ski trail?

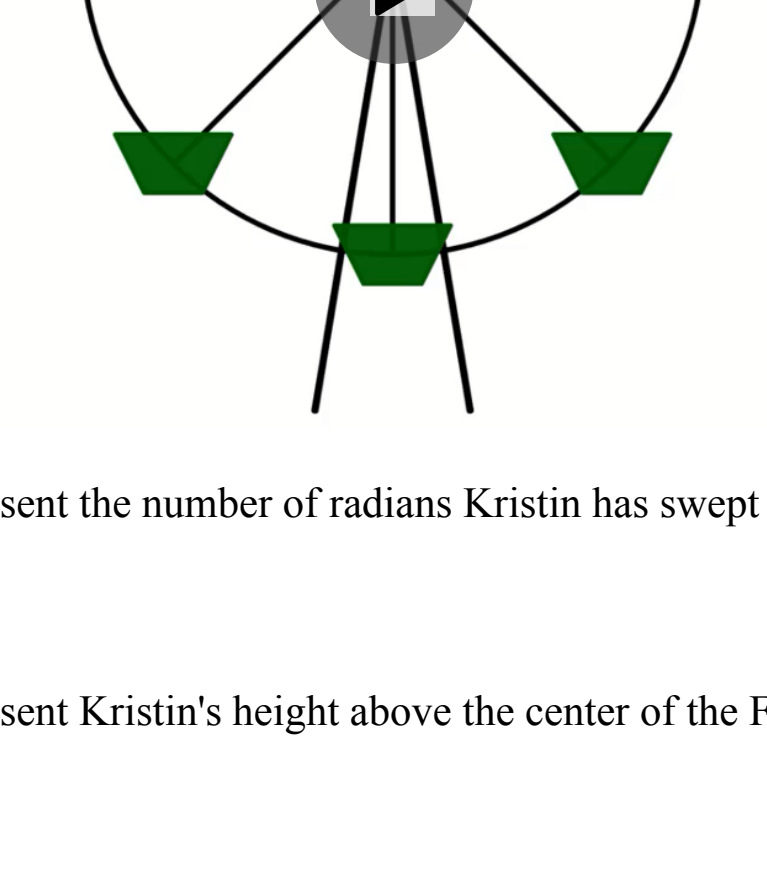
km Preview

Submit

Question 8. Points possible: 3
Unlimited attempts.
Score on last attempt: 3. Score in gradebook: 3

✓

Kristin boards a Ferris wheel at the 3-o'clock and rides the Ferris wheel for one full rotation (as shown below). The radius of the Ferris wheel is 12 meters. Let s represent the varying number of meters Kristin has traveled along the circular path since the ride started.



a. Write an expression (in terms of s) to represent the number of radians Kristin has swept out since the ride started.

Preview

b. Write an expression (in terms of s) to represent Kristin's height above the center of the Ferris wheel *measured in radius lengths*.

Preview

c. Write an expression (in terms of s) to represent Kristin's height above the center of the Ferris wheel *measured in meters*.

Preview

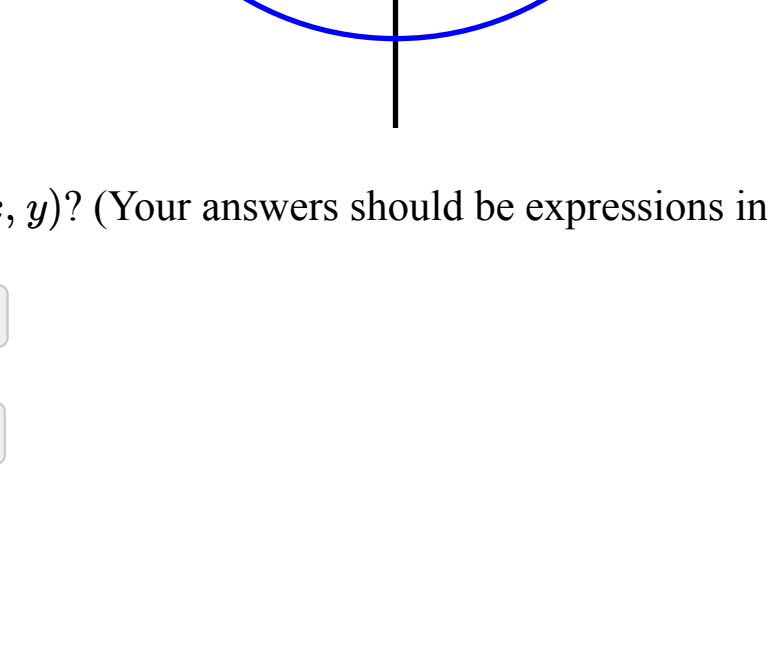
Get help! [Video](#)

Submit

Question 9. Points possible: 3
Unlimited attempts.
Score on last attempt: 3. Score in gradebook: 3

✓

The vertex of the angle below is at $(0, 0)$, and a circle with a radius of r units is centered at the vertex of the angle. The angle has a measure of θ radians.



What are the coordinates of the terminal point, (x, y) ? (Your answers should be expressions in terms of r and θ .)

$x =$ Preview

$y =$ Preview

Hint: enter "theta" for θ .

Submit

Question 10. Points possible: 2
Unlimited attempts.
Score on last attempt: 2. Score in gradebook: 2

Total Points Possible: 30

When you are done, click here to see a summary of your score