

Skills: Unit Circle, Arc Length formula

The newest version of an Exeter City Park is made up of a quarter of a circle. The distance of one of the sides is 120 m.

- A) How long is the fence that is needed to separate the park from the Neighborhoods back yards?
B) The City Planner decides to make the sides of the park 150m, how much more fencing will they need?

$$a) \quad 120 \left(\frac{\pi}{2} \right) = 60\pi$$

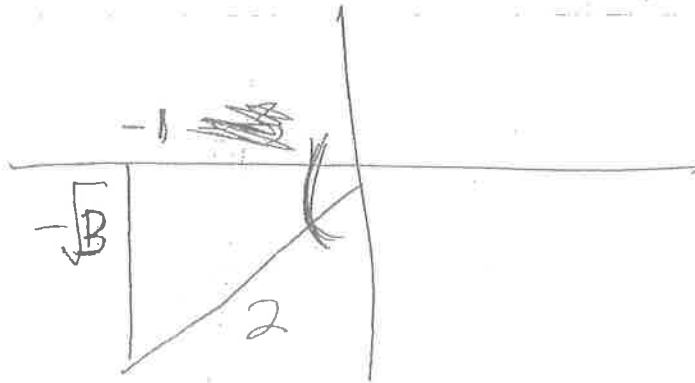
$$b) \quad 150 \left(\frac{\pi}{2} \right) = 75\pi$$

$$75\pi - 60\pi = 15\pi$$

Skills: Coordinate Plane, Point, Quadrants, Special-Right Triangles, Unit Circle

Given the information about the unit circle below, the arc between points P and Q has length m .

If the coordinates of point Q are $\left(\frac{-1}{2}, -\frac{\sqrt{3}}{2} \right)$, then what is the value of $\cot\theta$?



$$\tan = \frac{\text{opp}}{\text{adj}} = \frac{-\sqrt{3}}{-1}$$

$$\cot = \frac{\text{adj}}{\text{opp}} = \boxed{\frac{1}{\sqrt{3}}}$$

Skills: Coordinate Plane, Point, Quadrants, Pythagoreans Theorem

A student claims that they can use rules about the coordinates of point A to tell whether the cosine of the angle formed by the x-axis and the line that connects the origin to point A will equal a positive or a negative value.

What information would support the student's claim?

$\frac{x}{r} = \cos$

QII $\cos = \frac{-x}{r} = \cos(-)$

QI $\cos = \frac{x}{r} = \cos(+)$

(True)

Skills: Coordinate Plane, Point, Quadrants, Pythagoreans Theorem

A student claims that a negative x-coordinate will always result in a negative $\tan\theta$ when θ is the angle formed by the x-axis and the line that connects the origin to the point.

What information would disprove the student's claim?

QIII

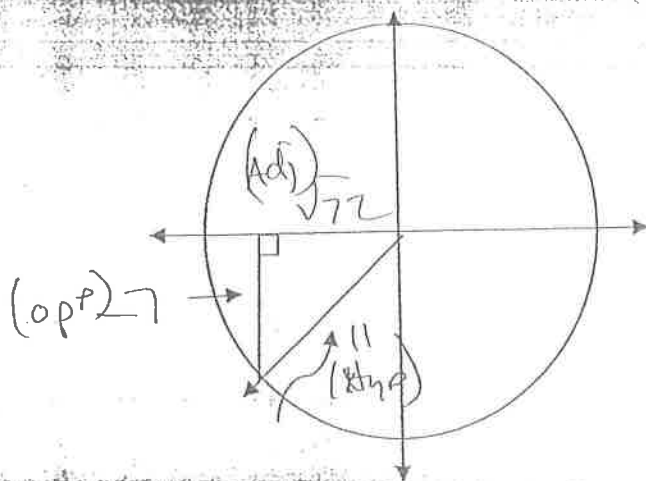
$\tan = \frac{-y}{-x}$

therefore a positive tan.

Student's statement not true

Skills: Coordinate Plane, Point, Quadrants, Pythagoreans Theorem, Trigonometric Ratios

Look at the figure below? Find the Sec θ



$$a^2 + b^2 = c^2$$

$$49 + b^2 = 121$$

$$b^2 = 72$$

$$b = \sqrt{72}$$

$$\sec \theta = \frac{H}{A} = \frac{11}{\sqrt{72}}$$

Skills: Coordinate Plane, Point, Quadrants, Reference Angles, Special Right Triangles

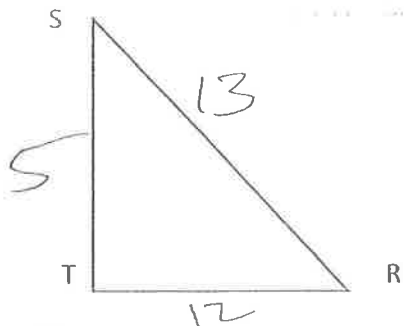
Are the $\sin\left(\frac{\pi}{6}\right)$ and the $\cos\left(\frac{7\pi}{6}\right)$ equal to each other?

$$\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$$

$$\cos\frac{7\pi}{6} = -\frac{\sqrt{3}}{2}$$

$$\frac{1}{2} \neq \frac{\sqrt{3}}{2}$$

Skills: Coordinate Plane, Point, Quadrants, Pythagoreans Theorem



$$\cot = \frac{RT}{ST} \quad \text{then } \tan = \frac{ST}{RT}$$

If $(\frac{RT}{ST})$ is equal to $\cot \theta$, What is \tan ?

B) Given that $RS = 13$ and $ST = 5$, Find RT

c) Find θ

$$\tan \theta = \frac{12}{5}$$

$$a^2 + b^2 = c^2$$

$$25 + 13^2 = 169$$

$$b = \sqrt{144}$$

$$b = 12$$

$$\tan^{-1} \left(\frac{12}{5} \right) =$$

↑
calculator.

Ferris Wheel with a diameter of 150 feet,

How far does it spin if: $\theta = \frac{\pi}{3}$?

$$150 \left(\frac{\pi}{3} \right) = 75\pi$$

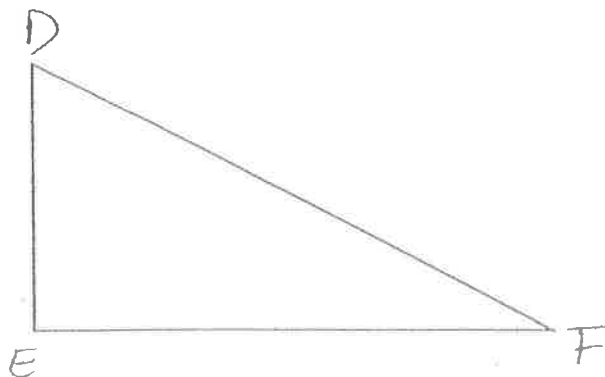
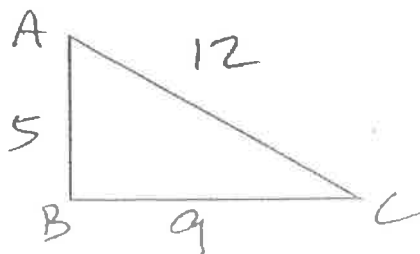
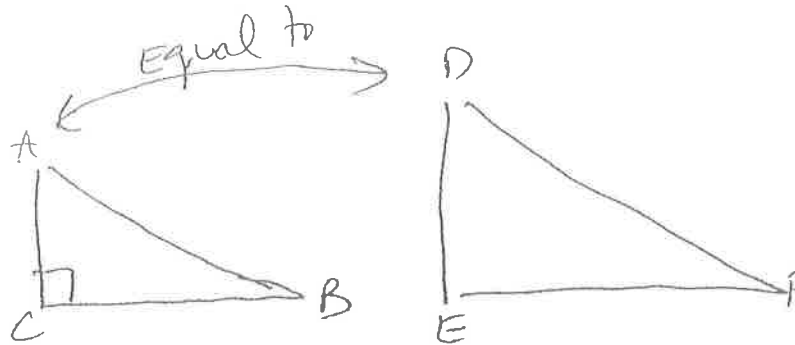
What is the θ if arc length is 8π ?

$$8\pi = 75\theta$$

$$\frac{8\pi}{75} = \theta$$

Similar triangles (REVIEW SKILLS)

~~DS~~



What angle or angles are equivalent to

$$\sin\left(\frac{9}{12}\right) \rightarrow \text{Angle } \underline{A} \text{ and } \underline{D}$$

What Trig ratios are equivalent to

choose reference

$$\csc A = \frac{AC}{AB}$$

csc

and Tan (use line segments)

$$\tan A = \frac{BC}{AB}$$

