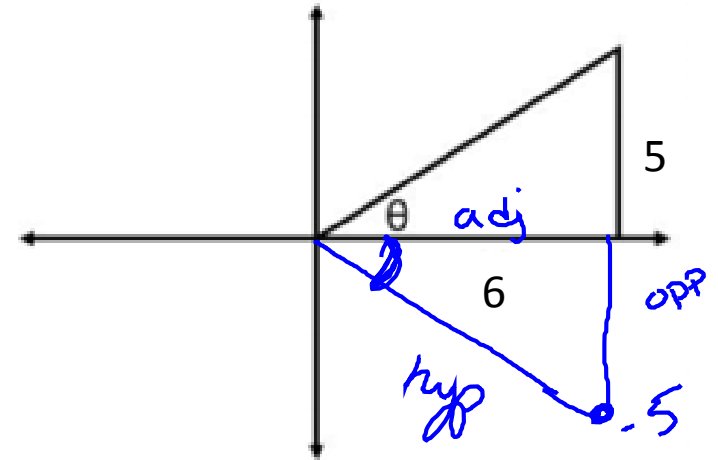


Tuesday, March 19, 2019

- Warm-up

- Given the diagram below; draw the corresponding triangle in quadrant 4 and write the ratios for $\sin(\theta)$, $\cos(\theta)$ and $\tan(\theta)$ for quadrant 4.



- $\sin(\theta) = \frac{\text{opp}}{\text{hyp}} = \frac{-5}{\sqrt{61}}$

- $\cos(\theta) = \frac{6}{\sqrt{61}}$

- $\tan(\theta) = \frac{-5}{6}$

$$\begin{aligned} \text{hyp} &= \sqrt{6^2 + (-5)^2} \\ &= \sqrt{36 + 25} = \sqrt{61} \end{aligned}$$

- Talk about Quizzes

- The Unit Circle

Objectives

Content: I will understand the **unit circle** and how it connects to the **trigonometric ratios**.

Social: I will listen well and discuss my uncertainties with my group members.

Language: I will clearly explain my application of the **unit circle** to **trigonometric ratios** in writing and to my group members.

Quizzes

Objectives

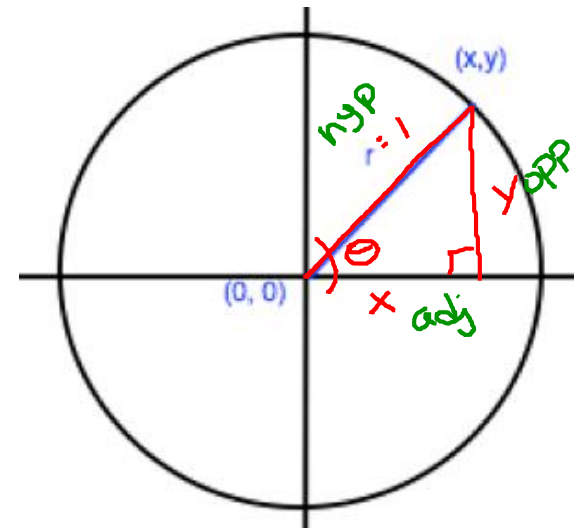
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The Unit Circle

radius of 1
centered @ (0,0)



$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{y}{1} = y$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{x}{1} = x$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{y}{x}$$

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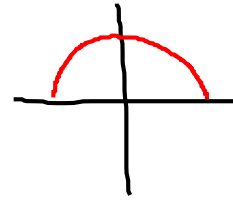
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Radians

just another way to measure angles

$$\frac{1}{2} \text{ rotation} = \pi$$



180°

$$\frac{1}{4} \text{ rotation} = \frac{\pi}{2}$$

90°

$$\text{full rotation} = 2\pi$$

360°

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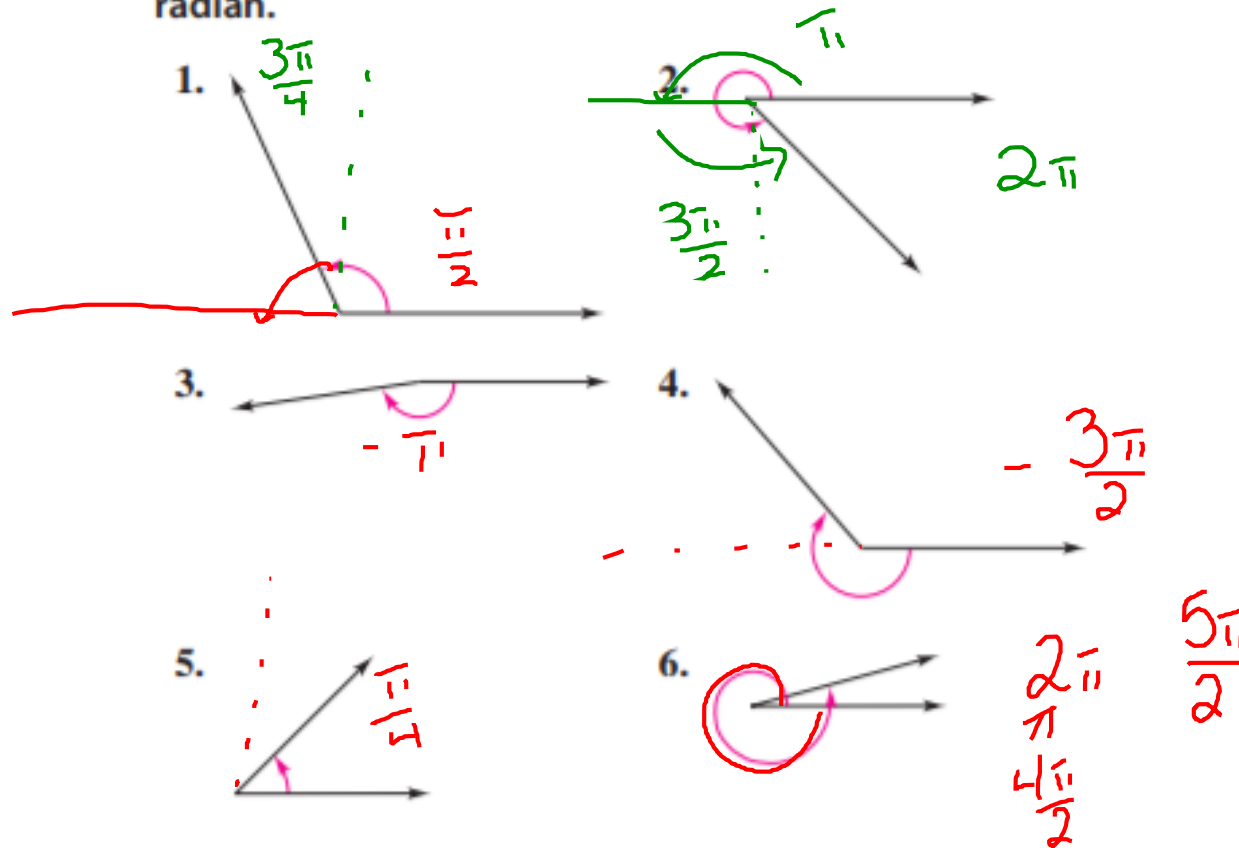
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Estimating Radians

$$\frac{1}{2} \text{ rotation} = 2\pi \text{ radians}$$

$$\frac{1}{4} = \frac{2\pi}{2} \text{ radians}$$

In Exercises 1–6, estimate the angle to the nearest one-half radian.



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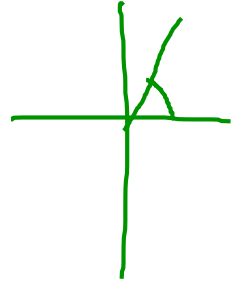
Converting Radians

$$\begin{aligned} \text{rad} &= 60^\circ \times \frac{\pi}{180} \\ &= \frac{60\pi}{180} = \frac{30}{30} = \pi \end{aligned}$$

$$\frac{2\pi \cdot 2}{6 \cdot 2} = \left(\frac{\pi}{3}\right)$$

$$\text{Radians} = \text{degrees} \times \frac{\pi}{180}$$

$$\text{Degrees} = \text{radians} \times \frac{180}{\pi}$$



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Converting Practice

In Exercises 47–50, rewrite each angle in radian measure as a multiple of π . (Do not use a calculator.)

47. (a) 30° (b) 150° 48. (a) 315° (b) 120°

49. (a) -20° (b) -240° 50. (a) -270° (b) 144°

In Exercises 51–54, rewrite each angle in degree measure. (Do not use a calculator.)

51. (a) $\frac{3\pi}{2}$ (b) $\frac{7\pi}{6}$ 52. (a) $-\frac{7\pi}{12}$ (b) $\frac{\pi}{9}$

53. (a) $\frac{7\pi}{3}$ (b) $-\frac{11\pi}{30}$ 54. (a) $\frac{11\pi}{6}$ (b) $\frac{34\pi}{15}$

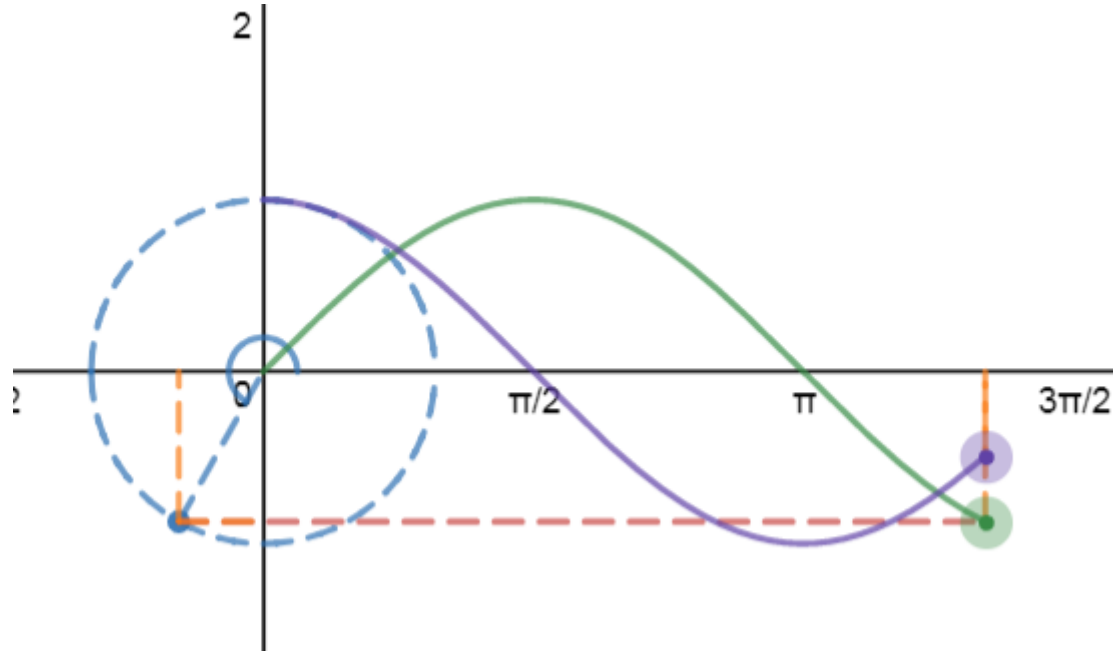
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Preview – Trig Makes Waves



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