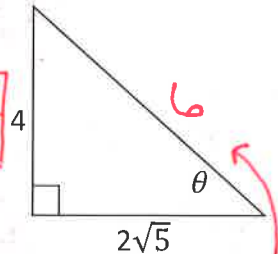


Unit 4 Quiz Review

1. State each of the trigonometric functions given the triangles below. Your answer must be rationalized and simplified.

A.) $\sin \theta = \frac{4}{6} = \frac{2}{3}$
 $\cos \theta = \frac{2\sqrt{5}}{6} = \frac{\sqrt{5}}{3}$
 $\tan \theta = \frac{4 \cdot \sqrt{5}}{2\sqrt{5} \cdot \sqrt{5}} = \frac{4\sqrt{5}}{2 \cdot 5} = \frac{4\sqrt{5}}{10} = \frac{2\sqrt{5}}{5}$

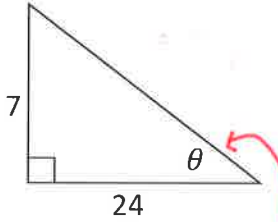
$\csc \theta = \frac{6}{4} = \frac{3}{2}$
 $\sec \theta = \frac{6 \cdot \sqrt{5}}{2\sqrt{5} \cdot \sqrt{5}} = \frac{6\sqrt{5}}{10} = \frac{3\sqrt{5}}{5}$
 $\cot \theta = \frac{2\sqrt{5}}{4} = \frac{\sqrt{5}}{2}$



$(2\sqrt{5})^2 + 4^2 = c^2$
 $(4 \cdot 5) + 16 = c^2$
 $20 + 16 = c^2$
 $36 = c^2$
 $6 = c$

B.) $\sin \theta = \frac{7}{25}$
 $\cos \theta = \frac{24}{25}$
 $\tan \theta = \frac{7}{24}$

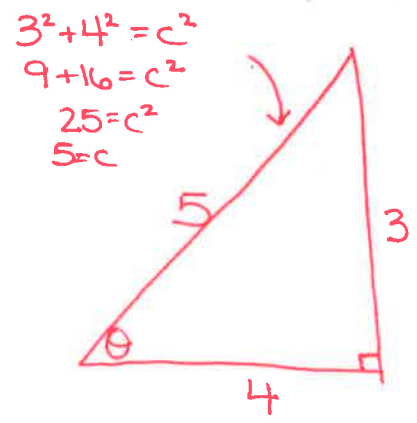
$\csc \theta = \frac{25}{7}$
 $\sec \theta = \frac{25}{24}$
 $\cot \theta = \frac{24}{7}$




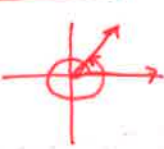
$7^2 + 24^2 = c^2$
 $49 + 576 = c^2$
 $625 = c^2$
 $25 = c$

2. If $\tan \theta = \frac{3}{4}$, find the values of the five remaining trigonometric functions for θ . Show the triangle used.

$\sin \theta = \frac{3}{5}$ $\csc \theta = \frac{5}{3}$ $\cos \theta = \frac{4}{5}$
 $\sec \theta = \frac{5}{4}$ $\cot \theta = \frac{4}{3}$



3. For each of the following angles, fill in the missing information.

Angle in Degrees	Quadrant the terminal side lies in	Co-terminal positive angle in degrees	Co-terminal negative angle in degrees	Angle in radians	Co-terminal negative angle in radians	Co-terminal positive angle in radians
324°	QIV 	$324^\circ + 360^\circ$ 684°	$324^\circ - 360^\circ$ -36°	$324^\circ \times \frac{\pi}{180}$ $= \frac{9\pi}{5}$	$-36^\circ \times \frac{\pi}{180}$ $= -\frac{\pi}{5}$	$684^\circ \times \frac{\pi}{180}$ $= \frac{19\pi}{5}$
$\frac{9\pi}{4} \times \frac{180^\circ}{\pi}$ $= 405^\circ$	QI 	$405^\circ + 360^\circ$ 765°	$405^\circ - 360^\circ$ $45^\circ - 360^\circ$ -315°	$\frac{9\pi}{4}$	$-315^\circ \times \frac{\pi}{180}$ $= -\frac{7\pi}{4}$	$765^\circ \times \frac{\pi}{180}$ $= \frac{17\pi}{4}$

make sure calculator's mode is in degrees!

4. Determine the measure of θ in degrees for each of the following equations. Round to the nearest whole number degree.

A.) $\sin \theta = 0.839$

$\theta = \sin^{-1}(0.839)$

$\theta = 57^\circ$

B.) $\cos \theta = -0.544$

$\theta = \cos^{-1}(-0.544)$

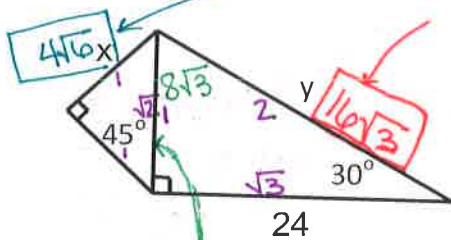
$\theta = 123^\circ$

C.) $\tan \theta = 9.514$

$\theta = \tan^{-1}(9.514)$

$\theta = 84^\circ$

5. Solve for x and y



$\frac{24}{\sqrt{3}} = \frac{k}{1}$

$k\sqrt{3} = 24$
 $\frac{k\sqrt{3}}{\sqrt{3}} = \frac{24}{\sqrt{3}}$

$k = \frac{24\sqrt{3}}{3}$

$k = 8\sqrt{3}$

$\frac{24}{\sqrt{3}} = \frac{y}{2}$

$\frac{y\sqrt{3}}{\sqrt{3}} = \frac{48}{\sqrt{3}}$

$y = \frac{48 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}}$

$y = \frac{48\sqrt{3}}{3}$

$y = 16\sqrt{3}$

$\frac{8\sqrt{3}}{\sqrt{2}} = \frac{x}{1}$

$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{8\sqrt{3}}{\sqrt{2}}$

$x = \frac{8\sqrt{3} \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}}$

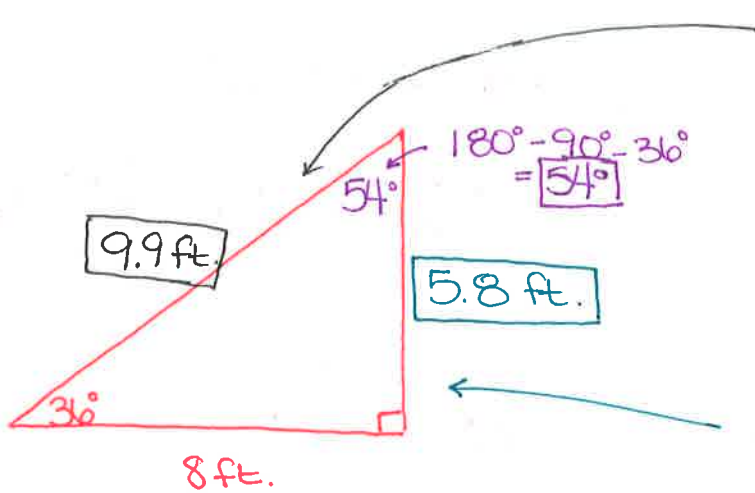
$x = \frac{8\sqrt{6}}{2}$

$x = 4\sqrt{6}$

6. When I was younger, I remember my grandpa wearing a straw hat every time he came over. When I stood 8 feet away from my grandpa, the angle of elevation to his hat was 36° . How tall was my grandpa? 5.8 ft tall!

A.) Given the following situation, draw a picture.

B.) Use your height to (at the age of 8) to solve for all missing angles and sides of the triangle.



$$\cos 36^\circ = \frac{8 \text{ ft.}}{y}$$

$$y \cos 36^\circ = 8$$

$$\frac{y \cos 36^\circ}{\cos 36^\circ} = \frac{8}{\cos 36^\circ}$$

$$y = \frac{8}{\cos 36^\circ}$$

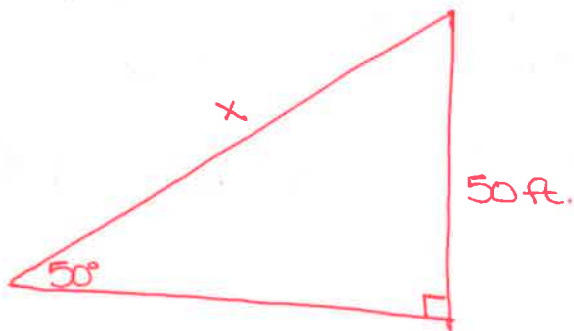
$$y = 9.9 \text{ ft.}$$

$$\tan 36^\circ = \frac{x}{8 \text{ ft.}}$$

$$x = 8 \cdot \tan 36^\circ$$

$$x = 5.8 \text{ ft.}$$

7. A seagull notices prey swimming in the ocean below. If the seagull is 50 feet above the ocean and the angle of depression from the seagull to its prey is 50° , how far would the seagull need to fly to go directly to its prey?



$$\sin 50^\circ = \frac{50 \text{ ft.}}{x}$$

$$\frac{x \sin 50^\circ}{\sin 50^\circ} = \frac{50}{\sin 50^\circ}$$

$$x = \frac{50}{\sin 50^\circ}$$

$$x = 65.3 \text{ ft.}$$

8. Given the following angles, determine:

A.) 253°

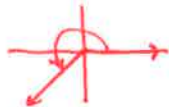
i.) Find the measure (in degrees) of a positive coterminal angle of 253° .

$$253^\circ + 360^\circ = \boxed{613^\circ}$$

ii.) Find the measure (in degrees) of a negative coterminal angle of 253° .

$$253^\circ - 360^\circ = \boxed{-107^\circ}$$

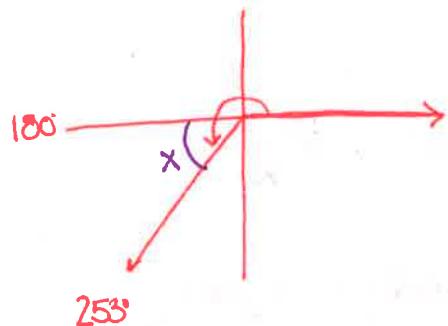
iii.) Find the quadrant that the terminal side lies in.



$\boxed{\text{Q III}}$

iv.) Find the measure (in degrees) of a reference angle of 253° .

$$253^\circ - 180^\circ = \boxed{73^\circ}$$



B.) $-\frac{4\pi}{5}$ (-144°)

i.) Find x such that $x\pi$ is a positive coterminal angle of $-\frac{4\pi}{5}$. Represent x as a reduced fraction.

$$-144^\circ + 360^\circ = 216^\circ$$

$$216^\circ \times \frac{\pi}{180^\circ} = \boxed{\frac{6\pi}{5}}$$

$$\boxed{x = \frac{6}{5}}$$

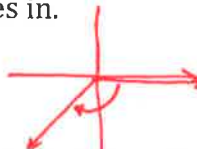
ii.) Find x such that $x\pi$ is a negative coterminal angle of $-\frac{4\pi}{5}$. Represent x as a reduced fraction.

$$-144^\circ - 360^\circ = -504^\circ$$

$$-504^\circ \times \frac{\pi}{180^\circ} = \boxed{\frac{-14\pi}{5}}$$

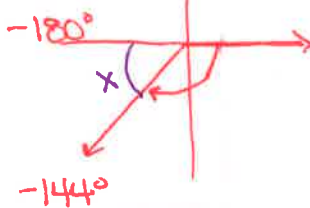
$$\boxed{x = -\frac{14}{5}}$$

iii.) Find the quadrant that the terminal side lies in.



$\boxed{\text{Q III}}$

iv.) Find the reference angle of $-\frac{4\pi}{5}$.



$$-144^\circ - (-180^\circ) = 36^\circ$$

$$36^\circ \times \frac{\pi}{180^\circ} = \boxed{\frac{\pi}{5}}$$