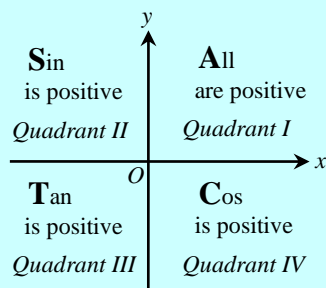


Lesson Worksheet 6.1B(I)

Objective: To determine the signs of trigonometric ratios.

The signs of trigonometric ratios can be determined by the 'CAST' diagram.



1. In each of the following, determine all the possible quadrants in which the angle θ lies.

(a) $\sin \theta = \frac{1}{3}$

$\therefore \sin \theta$ _____ 0 (</>)
 $\therefore \theta$ lies in quadrant ____ or ____.

(b) $\sin \theta = -\frac{1}{2}$

$\therefore \sin \theta$ _____ 0 (</>)
 $\therefore \theta$ lies in quadrant ____ or ____.

(c) $\cos \theta = 0.4$

$\therefore \cos \theta$ _____ 0 (</>)
 $\therefore \theta$ lies in quadrant ____ or ____.

(d) $\tan \theta = -2$

$\therefore \tan \theta$ _____ 0 (</>)
 $\therefore \theta$ lies in quadrant ____ or ____.

2. If $\sin \theta = \frac{4}{5}$ and $90^\circ < \theta < 180^\circ$, find the values of $\cos \theta$ and $\tan \theta$.

\therefore _____ $< \theta <$ _____

$\therefore \theta$ lies in quadrant ____.

Let $P(a, b)$ be a point on the terminal side of θ .

Let $b =$ _____ and $r =$ _____.

$$r = \sqrt{a^2 + b^2}$$

$$\text{_____} = \sqrt{a^2 + \text{_____}}$$

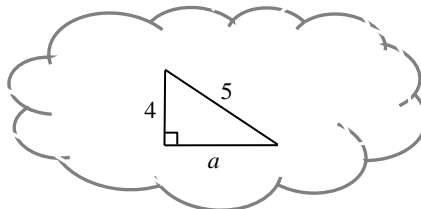
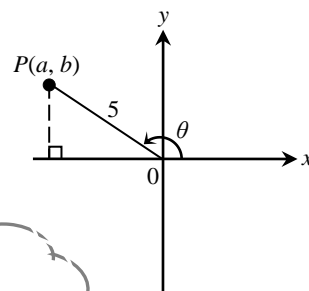
$$(\text{_____})^2 = a^2 + \text{_____}$$

$$a^2 = \text{_____}$$

$$a =$$

$$\cos \theta = \frac{a}{r} = \text{_____}$$

$$\tan \theta = \frac{b}{a} = \text{_____}$$



3. If $\cos \theta = \frac{1}{4}$ and $270^\circ < \theta < 360^\circ$, find the values of $\sin \theta$ and $\tan \theta$.

(Leave the answers in surd form.)

\therefore _____ $< \theta <$ _____

$\therefore \theta$ lies in quadrant ____.

Let $P(a, b)$ be a point on the terminal side of θ .

Let $a =$ _____ and $r =$ _____.

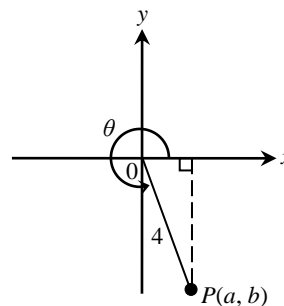
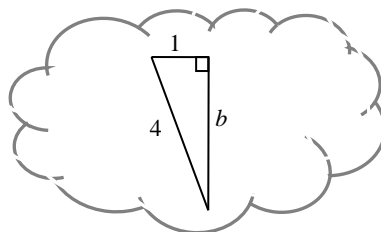
$$r = \sqrt{a^2 + b^2}$$

$$\text{_____} = \sqrt{\text{_____} + b^2}$$

$$(\text{_____})^2 = (\text{_____})^2 + b^2$$

$$b^2 = \text{_____}$$

$$b =$$



4. If $\tan \theta = 3$ and $180^\circ < \theta < 270^\circ$, find the values of $\sin \theta$ and $\cos \theta$.

→Exercise 6.1: 10, 11

(Leave the answers in surd form.)

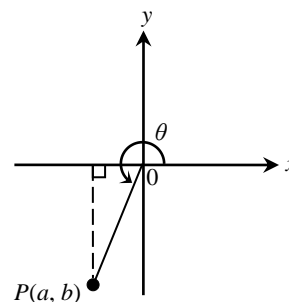
\therefore _____ $< \theta <$ _____

$\therefore \theta$ lies in quadrant ____.

Let $P(a, b)$ be a point on the terminal side of θ .

Let $a =$ _____ and $b =$ _____.

$$r = \sqrt{a^2 + b^2}$$



Try More

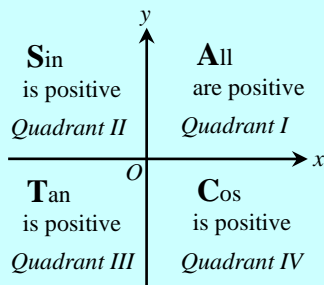
5. If $\cos \theta = -\frac{2}{\sqrt{13}}$ and $90^\circ < \theta < 180^\circ$, find the values of $\sin \theta$ and $\tan \theta$.

(Leave the answers in surd form if necessary.)

Lesson Worksheet 6.1B(II)

Objective: To determine the signs of trigonometric ratios.

The signs of trigonometric ratios can be determined by the ‘CAST’ diagram.



1. In each of the following, determine all the possible quadrants in which the angle θ lies.

(a) $\sin \theta = \frac{2}{5}$

$\therefore \sin \theta$ _____ 0 (</>)
 $\therefore \theta$ lies in quadrant ____ or ____.

(b) $\sin \theta = -\frac{1}{\sqrt{2}}$

$\therefore \sin \theta$ _____ 0 (</>)
 $\therefore \theta$ lies in quadrant ____ or ____.

(c) $\cos \theta = -0.3$

(d) $\tan \theta = 3$

2. If $\cos \theta = \frac{3}{5}$ and $270^\circ < \theta < 360^\circ$, find the values of $\sin \theta$ and $\tan \theta$.

\therefore _____ $< \theta <$ _____

$\therefore \theta$ lies in quadrant ____.

Let $P(a, b)$ be a point on the terminal side of θ .

Let $a =$ _____ and $r =$ _____.

$$r = \sqrt{a^2 + b^2}$$

$$\text{_____} = \sqrt{\text{_____} + b^2}$$

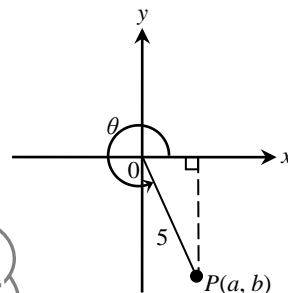
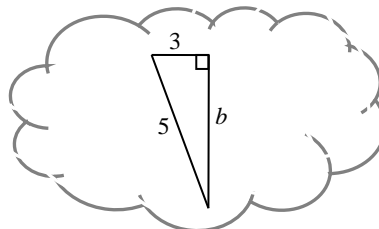
$$(\text{_____})^2 = \text{_____} + b^2$$

$$b^2 = \text{_____}$$

$$b =$$

$$\sin \theta = \frac{b}{r} = \text{_____}$$

$$\tan \theta = \frac{b}{a} = \text{_____}$$



3. If $\tan \theta = -\frac{8}{15}$ and $90^\circ < \theta < 180^\circ$, find the values of $\sin \theta$ and $\cos \theta$.

4. If $\sin \theta = -\frac{2}{5}$ and $180^\circ < \theta < 270^\circ$, find the values of $\cos \theta$ and $\tan \theta$.

→Exercise 6.1: 10, 11

(Leave the answers in surd form.)

Try More

In each of the following, leave the answers in surd form. (5 – 6)

5. If $\cos \theta = \frac{2}{3}$ and $\tan \theta > 0$, find the values of

$\sin \theta$ and $\tan \theta$.

6. If $\sin \theta = -\frac{5}{6}$ and $\cos \theta > 0$, find the values

of $\cos \theta$ and $\tan \theta$.