


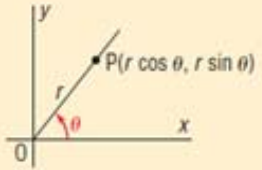
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$\frac{\sin b}{\tan b} =$


3.1 Angles in Standard Position in Quadrant 1


For a point on the coordinate plane, when an angle θ is between 0° and 360° , the angle is measured counterclockwise from the positive x-axis, the initial arm. This angle is said to be in Standard position.
 The line joining the point and the origin is called the terminal arm. The point P is the terminal point.

Angle in Standard Position in Quadrant 1





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Trigonometry Key Terms:

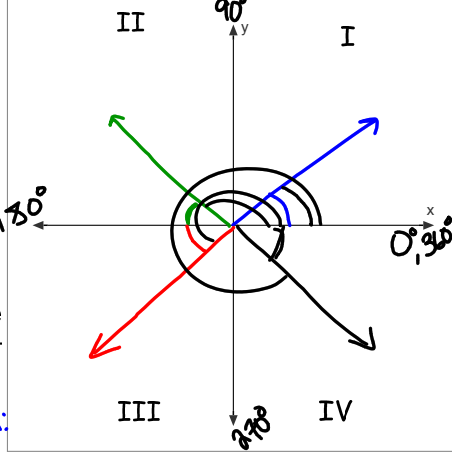
The Cartesian Plane:
has four quadrants that run counterclockwise starting at the top right quadrant which is positive (x, y).


Initial Arm: the positive x-axis; the starting point of the rotation.

Terminal Arm: the stopping point of the rotation.

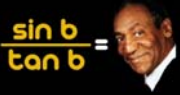
*** Reference Angle:** The acute angle between the terminal arm and the x-axis.

Angle in Standard Position:
angle from positive x-axis to terminal arm





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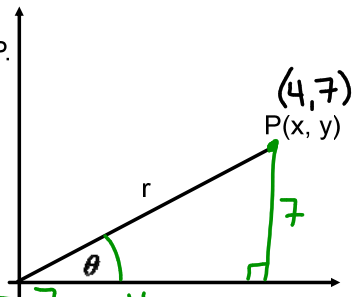
Ex.) The point P(4, 7) is on the terminal arm of an angle, θ , in standard position.

a) Determine the distance r from the origin to P.

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

$$\sqrt{4^2 + 7^2} = r \quad \boxed{r = 8.1}$$


b) Determine the primary trigonometric ratios of θ .



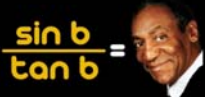
$$\sin \theta = \frac{7}{8.1} \quad \cos \theta = \frac{4}{8.1} \quad \tan \theta = \frac{7}{4}$$

c) Determine the measure of θ to the nearest degree.

$$\boxed{\theta = 60^\circ}$$



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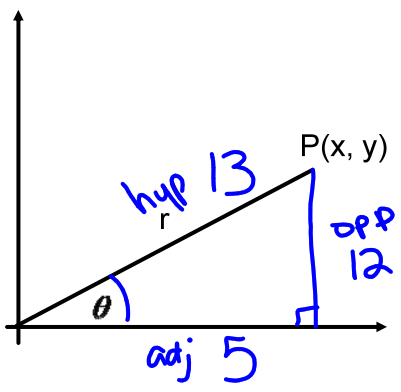


Ex.) The angle θ is in standard position in Quadrant I.


$\cos \theta = \frac{5}{13}$; what are $\sin \theta$ and $\tan \theta$?

$$\cos \theta = \frac{5}{13} \quad \begin{matrix} \text{adj} \\ \text{hyp} \end{matrix}$$


$$c^2 - b^2 = a^2$$

$$\sqrt{13^2 - 5^2} = a \quad a = 12$$


$$\sin \theta = \frac{12}{13} \quad \tan \theta = \frac{12}{5}$$



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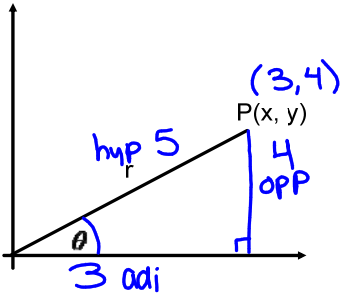
$\frac{\sin b}{\tan b} =$


Ex) The point P(3, 4) is on the terminal arm of an angle in standard position.

a) Determine the distance r from the origin to P.

$$r = \sqrt{3^2 + 4^2} = 5$$

b) Determine the primary trigonometric ratios of θ .



$$\sin \theta = \frac{4}{5} \quad \cos \theta = \frac{3}{5} \quad \tan \theta = \frac{4}{3}$$

c) Determine the measure of θ to the nearest degree.

$\theta = 53^\circ$



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$\frac{\sin b}{\tan b} =$


Pg. 83 # 1-4, 13.

Pg. 96 #1a, 3a, 5c.