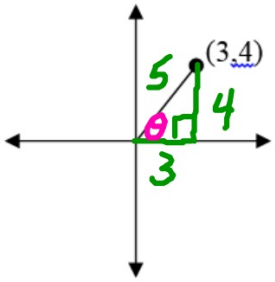
New Types of Problems

1. Find the exact values of the six trig functions of θ in standard position at the point (3, 4).



a) *Use the Pythagorean theorem to find the radius* 5

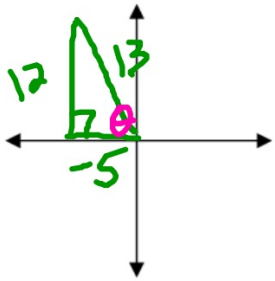
b) *Use* $\mathrm{S_h^oC_h^aT_a^o}$ *to find the values of the six trig functions.*

$\sin\theta = \frac{4}{5} \rightarrow \csc\theta = \frac{5}{4}$

$\cos\theta = \frac{3}{5} \rightarrow \sec\theta = \frac{5}{3}$

$\tan\theta = \frac{4}{3} \rightarrow \cot\theta = \frac{3}{4}$

2. Find the exact values of the six trig functions in standard position at the point (-5, 12).

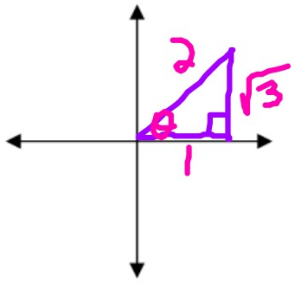


$\sin\theta = \frac{12}{13} \longrightarrow \csc\theta = \frac{13}{12}$

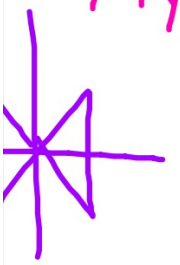
$\cos\theta = \frac{-5}{13} \longrightarrow \sec\theta = \frac{-13}{5}$

$\tan\theta = \frac{-12}{5} \longrightarrow \cot\theta = -\frac{5}{12}$

. If $\cos\theta = \frac{1}{2}$ and θ lies in quadrant I, find the exact values of the six trig functions.



$1^2 + y^2 = 2^2$



$\sin\theta = \frac{\sqrt{3}}{2}$ $\quad \csc\theta = \frac{2\sqrt{3}}{3}$

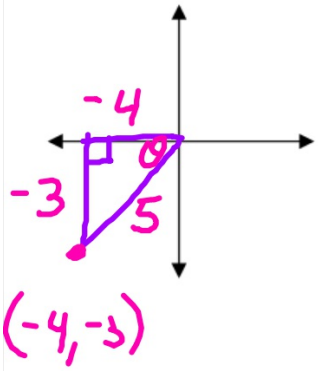
$\cos\theta = \frac{1}{2}$ $\quad \sec\theta = 2$

$\tan\theta = \sqrt{3}$ $\quad \cot\theta = \frac{\sqrt{3}}{3}$

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

$\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

4. If $\tan\theta = \frac{3}{4}$ and θ lies in quadrant III, find the exact values of the six trig functions.



$\sin\theta = -\frac{3}{5}$ $\quad \csc\theta = \frac{-5}{3}$

$\cos\theta = \frac{-4}{5}$ $\quad \sec\theta = -\frac{5}{4}$

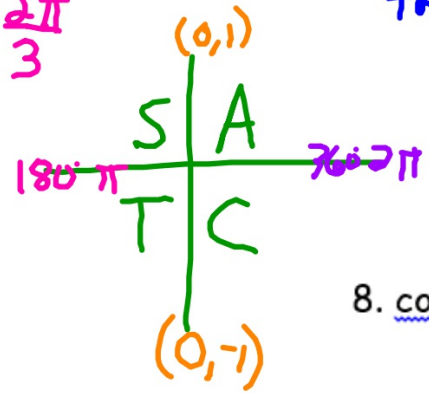
$\tan\theta = \frac{3}{4}$ $\quad \cot\theta = \frac{4}{3}$

the values of θ in both degrees and radians given the following information.

n $\theta = \frac{\sqrt{3}}{2}$ 60° 120° $\frac{\pi}{3}$ $\frac{2\pi}{3}$

6. cot $\theta = -1$ $\tan\theta = -1$ 135° 315° $\frac{3\pi}{4}$ $\frac{7\pi}{4}$

tan

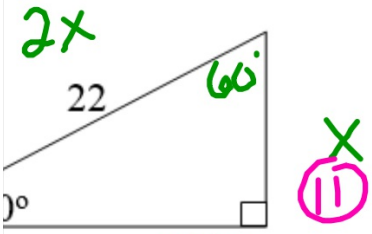


c $\theta = 1$ $\sin\theta = 1$ 90° $\frac{\pi}{2}$

8. cos $\theta = \frac{1}{2}$ 60° 300° $\frac{\pi}{3}$ $\frac{5\pi}{3}$

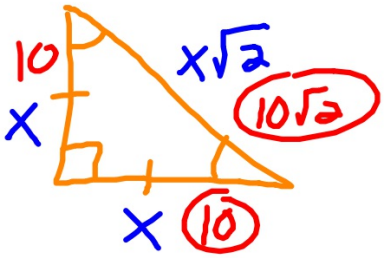
for the missing sides, using the information provided below.

10. $\theta = 45^{\circ}$, y = 10



$2x = 22$

$x = 11$



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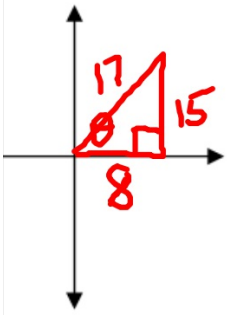
d the exact values of the six trig functions in standard position at the point (8,15).

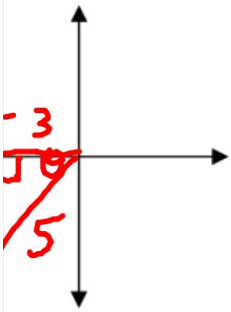


$\sin\theta = \frac{15}{17}$ $\quad \csc\theta = \frac{17}{15}$

$\cos\theta = \frac{8}{17}$ $\quad \sec\theta = \frac{17}{8}$

$\tan\theta = \frac{15}{8}$ $\quad \cot\theta = \frac{8}{15}$

d the exact values of the six trig functions in standard position at the point (-3, -4).



$\sin\theta = \frac{-4}{5}$ $\quad \csc\theta = \frac{-5}{4}$

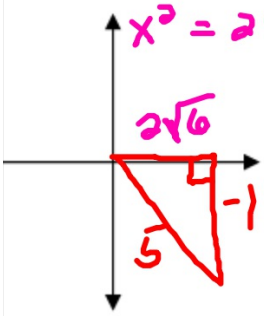
$\cos\theta = \frac{-3}{5}$ $\quad \sec\theta = \frac{-5}{3}$

$\tan\theta = \frac{4}{3}$ $\quad \cot\theta = \frac{3}{4}$

If csc θ = -5 and θ lies in quadrant IV, find the exact values of the six trig functions.

$x^2+(-1)^2=5^2$

$x^2=24$



$\sin\theta=\frac{-1}{5}$ $\quad \csc\theta=-5$

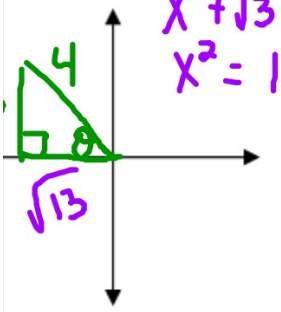
$\cos\theta=\frac{2\sqrt{6}}{5}$ $\quad \sec\theta=\frac{5}{2\sqrt{6}}=\frac{5\sqrt{6}}{12}$

$\tan\theta=\frac{-1}{2\sqrt{6}}=\frac{-\sqrt{6}}{12}$ $\quad \cot\theta=-2\sqrt{6}$

If $\sin\theta=\frac{\sqrt{3}}{4}$ and θ lies in quadrant II, find the exact values of the six trig functions.

$x^2+\sqrt{3}^2=4^2$

$x^2=13$



$\sin\theta=\frac{\sqrt{3}}{4}$ $\quad \csc\theta=\frac{4\sqrt{3}}{3}$

$\cos\theta=\frac{-\sqrt{13}}{4}$ $\quad \sec\theta=\frac{-4\sqrt{13}}{13}$

$\tan\theta=\frac{-\sqrt{39}}{13}$ $\quad \cot\theta=\frac{-\sqrt{39}}{3}$

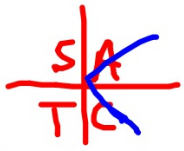
Find the values of θ in both degrees and radians given the following information.

15. $\sec\theta = 2$

$\cos\theta = \frac{1}{2}$

$60^\circ \quad 300^\circ$

$\frac{\pi}{3} \quad \frac{5\pi}{3}$



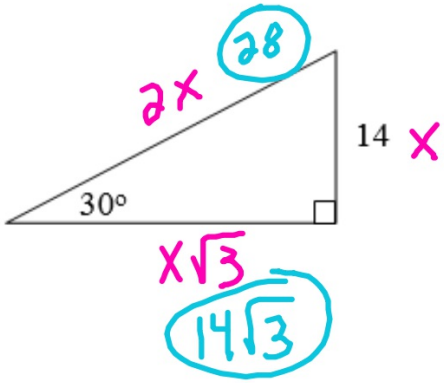
16. $\tan\theta = 1$

$45^\circ \quad 225^\circ$

$\frac{\pi}{4} \quad \frac{5\pi}{4}$

Solve for the missing sides, using the information provided below.

17.



18. $\theta = 60^\circ$, r = 16