**Find the RATIO of the trig function indicated. Do NOT find the actual measure of the angle!**

**1.**
$\tan\theta$

$\dfrac{Opp}{Adj}$  3  5  4

$\boxed{\dfrac{3}{4}}$

**2.**
$\sin\theta$

6  10  8

$\dfrac{Opp}{Hyp}$

$\dfrac{6}{10} = \boxed{\dfrac{3}{5}}$

**3.**
$\cot\theta$

6  $3\sqrt{21}$  15

$\dfrac{3\sqrt{21}}{6}$

$\dfrac{Adj}{Opp}$  $3\sqrt{21}$

$\boxed{\dfrac{\sqrt{21}}{2}}$

**4.**
$\sec\theta$

$\dfrac{Hyp}{Adj}$  6  8  10

$\dfrac{10}{8} = \boxed{\dfrac{5}{4}}$

**5.**
$\csc\theta$

$\dfrac{Hyp}{Opp}$  $2\sqrt{15}$  16  14

$\dfrac{16}{2\sqrt{15}} = \dfrac{8}{\sqrt{15}}$

$\dfrac{8\cdot\sqrt{15}}{\sqrt{15}\cdot\sqrt{15}} = \boxed{\dfrac{8\sqrt{15}}{15}}$

**6.**
$\cos\theta$

$4\sqrt{5}$  4  8

$\dfrac{Adj}{Hyp}$

$\dfrac{8}{4\sqrt{5}} = \dfrac{2}{\sqrt{5}}\cdot\dfrac{\sqrt{5}}{\sqrt{5}} = \boxed{\dfrac{2\sqrt{5}}{5}}$

**7.**
$\csc\theta$

10  4  $2\sqrt{21}$

$\dfrac{Hyp}{Opp}$

$\dfrac{10}{4} = \boxed{\dfrac{5}{2}}$

**8.**
$\sec\theta$

$\dfrac{Hyp}{Cos}$  12  20  16

$\dfrac{20}{16} = \boxed{\dfrac{5}{4}}$

**Use the given point on the terminal side of the angle $\theta$ to find the trigonometric function indicated.**

**9.**
$\sec\theta$

$\dfrac{Hyp}{Adj}$

$(-8,-15)$

$\boxed{-\dfrac{17}{8}}$

$8^2 + 15^2 = 17^2$

**10.**
$\sec\theta$

$\dfrac{Hyp}{Adj}$

$(-5,\sqrt{11})$

$\boxed{-\dfrac{6}{5}}$

$5^2 + \sqrt{11}^2 = 6^2$

**Draw the reference triangle. Find the EXACT value of the trig ratio for $\theta$.**

**11.** $\sin\theta$ for $(6,8)$

$\dfrac{opp}{hyp}$

10  8  6

$\dfrac{8}{10} = \boxed{\dfrac{4}{5}}$

$6^2 + 8^2 = 10^2$

**12.** $\cos\theta$ for $(\sqrt{3},-1)$

$\dfrac{adj}{hyp}$

$\sqrt{3}$  2  -1

$\boxed{\dfrac{\sqrt{3}}{2}}$

$\sqrt{3}^2 + 1^2 = 2^2$

**13.** $\sec\theta$ for $(-15,-5)$

$\dfrac{Hyp}{Cos}$

$-15$  $-5$  $5\sqrt{10}$

$\dfrac{5\sqrt{10}}{-15} = \boxed{-\dfrac{\sqrt{10}}{3}}$

$15^2 + 5^2 = \sqrt{250}^2$

$\sqrt{25}\cdot\sqrt{10}$
$5\sqrt{10}$

**14.** $\csc\theta$ for $(-2,2\sqrt{3})$

$\dfrac{Hyp}{opp}$

$2\sqrt{3}$  4  $-2$

$\dfrac{4}{2\sqrt{3}} = \dfrac{2\cdot\sqrt{3}}{\sqrt{3}\cdot\sqrt{3}} = \boxed{\dfrac{2\sqrt{3}}{3}}$
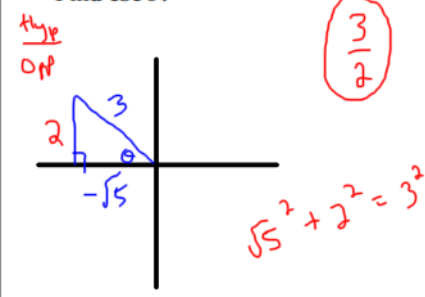
$2^2 + (2\sqrt{3})^2 = 4^2$

**Draw the reference triangle. Find the EXACT value of the trig ratio for $\theta$.**

**15.** Given $\tan\theta = \dfrac{12}{5}$ in quadrant III.
Find $\csc\theta$.

$\dfrac{Hyp}{Opp}$

$-5$  $-12$  13

$\boxed{-\dfrac{13}{12}}$

$5^2 + 12^2 = 13^2$

**16.** Given $\sec\theta = -\dfrac{5}{4}$ where $\dfrac{\pi}{2} < \theta < \pi$.
Find $\tan\theta$.

$\dfrac{Opp}{Hyp}$

3  5  $-4$

$\boxed{-\dfrac{3}{4}}$

$4^2 + 3^2 = 5^2$

**17.** Given $\tan\theta = -\frac{15}{8}$ where $\sin\theta < 0$.

   Find $\cos\theta$.

$\dfrac{Adj}{Hyp}$

$\boxed{\dfrac{8}{17}}$

$8^2 + 15^2 = 17^2$
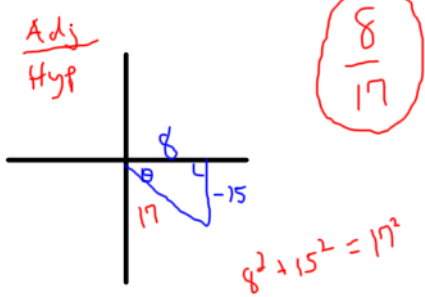
**18.** Given $\cos\theta = -\frac{\sqrt{5}}{3}$ where $\tan\theta$ is negative.

   Find $\csc\theta$.

$\dfrac{Hyp}{Opp}$

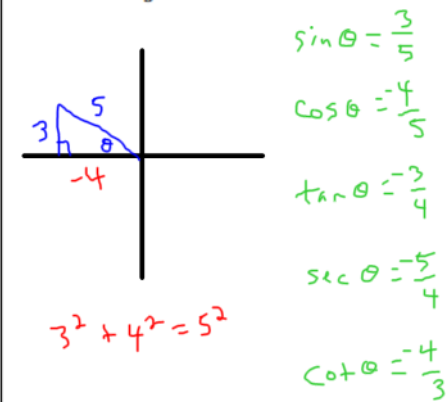$\boxed{\dfrac{3}{2}}$

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

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**Find the exact value of the other five trig functions for angle $\theta$ in standard position.**

**19.** $\tan\theta = 3$ in quadrant III

$\sin\theta = -\dfrac{3\cdot\sqrt{10}}{\sqrt{10}\cdot\sqrt{10}} = \dfrac{-3\sqrt{10}}{10}$

$\cos\theta = -\dfrac{1\cdot\sqrt{10}}{\sqrt{10}\cdot\sqrt{10}} = -\dfrac{\sqrt{10}}{10}$

$\csc\theta = -\dfrac{\sqrt{10}}{3}$

$\sec\theta = -\sqrt{10}$

$\cot\theta = \dfrac{1}{3}$

$3^2 + 1^2 = \sqrt{10}^2$
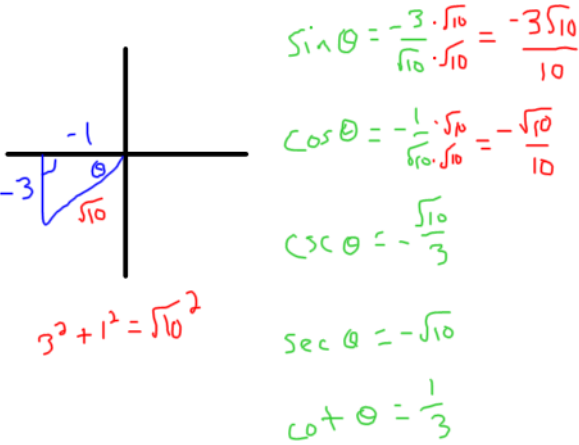
**20.** $\csc\theta = \frac{5}{3}$ in quadrant II

$\sin\theta = \dfrac{3}{5}$

$\cos\theta = \dfrac{-4}{5}$

$\tan\theta = \dfrac{-3}{4}$

$\sec\theta = \dfrac{-5}{4}$

$\cot\theta = \dfrac{-4}{3}$

$3^2 + 4^2 = 5^2$

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**Let $\theta$ be an angle in standard position. In which quadrant or quadrants can $\theta$ lie under the given conditions?**

21. $\cos\theta$ is negative   **II and III**

22. $\tan\theta > 0$   **I and III**

23. $\cos\theta$ and $\tan\theta$ have the same sign   **I and II**

24. $\sin\theta$ is negative and $\cos\theta$ is positive   **IV**

25. $\sin\theta$ and $\cos\theta$ have the opposite sign   **II and IV**

26. $\csc\theta < 0$   **III and IV**

27. $\cot\theta$ is negative   **II and IV**

$-,+$     $+,+$

$\begin{array}{c|c} S & A \\ \hline T & C \end{array}$

$+,-$

$-,-$

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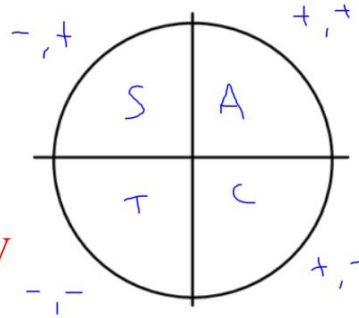
## Skillz Review!  Let's put some Trig in our Algebra!

### MULTIPLY MONOMIAL BY BINOMIAL aka DISTRIBUTE

| $3x(4x-5)$ | $\sin x(\sin x + 1)$ | $2\cos\theta(3\cos\theta - \sin\theta)$ |
|---|---|---|
| $12x^2 - 15x$ | $\sin^2 x + \sin x$ | $6\cos^2\theta - 2\cos\theta\sin\theta$ |

### MULTIPLY BINOMIAL BY BINOMIAL aka FOIL

| $(3x+2)(2x-5)$ | $(\sin\theta+2)(\sin\theta-5)$ | $(\cos x + \tan y)(\cos x - \tan y)$ |
|---|---|---|
| $6x^2 - 15x + 4x - 10$ | $\sin^2\theta - 5\sin\theta + 2\sin\theta - 10$ | $\cos^2 x - \cos x\tan y + \cos x\tan y - \tan^2 y$ |
| $\boxed{6x^2 - 11x - 10}$ | $\boxed{\sin^2\theta - 3\sin\theta - 10}$ | $\boxed{\cos^2 x - \tan^2 y}$ |