Worksheet – Six Trigonometric Ratios

1. For each of the following questions, state the exact values of the six trig ratios.

    a) $P(\sqrt{3}, -1)$

    b) $P(-2, \sqrt{5})$

2. For each of the following questions, state the other five trig ratios.

    a) $\cos \theta = -\frac{1}{3}$ and $\sin \theta > 0$

    b) $\cot \theta = \frac{2}{5}$ and $\csc \theta < 0$

    c) $\csc \theta = -\frac{5}{4}$ and $\cot \theta > 0$

Answers

1. a) $\sin \theta = -\dfrac{1}{2}$ $\csc \theta = -2$

$\cos \theta = \dfrac{\sqrt{3}}{2}$ $\sec \theta = \dfrac{2\sqrt{3}}{3}$

$\tan \theta = -\dfrac{\sqrt{3}}{3}$ $\cot \theta = -\sqrt{3}$

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b) $\sin \theta = \dfrac{\sqrt{5}}{3}$ $\csc \theta = \dfrac{3\sqrt{5}}{5}$

$\cos \theta = -\dfrac{2}{3}$ $\sec \theta = -\dfrac{3}{2}$

$\tan \theta = -\dfrac{\sqrt{5}}{2}$ $\cot \theta = -\dfrac{2\sqrt{5}}{5}$

2. a) The terminal arm is in Quadrant 2.

$\sin \theta = \dfrac{2\sqrt{2}}{3}$ $\csc \theta = \dfrac{3\sqrt{2}}{4}$

$\sec \theta = -3$

$\tan \theta = -2\sqrt{2}$ $\cot \theta = -\dfrac{\sqrt{2}}{4}$

b) The terminal arm is in Quadrant 3.

$$\sin\theta = \frac{-5\sqrt{29}}{29}$$

$$\csc\theta = -\frac{\sqrt{29}}{5}$$

$$\cos\theta = \frac{-2\sqrt{29}}{29}$$

$$\sec\theta = \frac{\sqrt{29}}{2}$$

$$\tan\theta = \frac{5}{2}$$

c) The terminal arm is in Quadrant 2.

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

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

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

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

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