

Trig Ratios of Angles in Standard Position

1. Each Point P is on the terminal arm of angle θ in standard position. Calculate $\sin \theta$, $\cos \theta$, and $\tan \theta$ for each.

a. $P(12, -5)$

b. $P(-4, -2)$

c. $P(-3, 1)$

d. $P(-3, -4)$

e. $P(0, 4)$

f. $P(-5, 0)$

2. For each angle θ , find the exact values of the other two trigonometric ratios.

a. θ is in quadrant two and $\cos \theta = -\frac{5}{13}$

b. $\tan \theta > 0$ and $\cos \theta = -\frac{\sqrt{15}}{4}$

c. θ is in quadrant three and $\tan \theta = \frac{3}{2}$

d. $\cos \theta > 0$ and $\sin \theta = -\frac{3}{4}$

e. θ is in quadrant two and $\cos \theta = a$ [express $\sin \theta$ and $\tan \theta$ in terms of a]

ANSWERS FOR LESSON 2

$$1a. \sin \theta = -\frac{5}{13} \quad \cos \theta = \frac{12}{13} \quad \tan \theta = -\frac{5}{12}$$

$$1b. \sin \theta = -\frac{1}{\sqrt{5}} \text{ or } -\frac{\sqrt{5}}{5} \quad \cos \theta = -\frac{2}{\sqrt{5}} \text{ or } -\frac{2\sqrt{5}}{5} \quad \tan \theta = \frac{1}{2}$$

$$1c. \sin \theta = \frac{1}{\sqrt{10}} \text{ or } \frac{\sqrt{10}}{10} \quad \cos \theta = -\frac{3}{\sqrt{10}} \text{ or } -\frac{3\sqrt{10}}{10} \quad \tan \theta = -\frac{1}{3}$$

$$1d. \sin \theta = -\frac{4}{5} \quad \cos \theta = -\frac{3}{5} \quad \tan \theta = \frac{4}{3}$$

$$1e. \sin \theta = 1 \quad \cos \theta = 0 \quad \tan \theta = \text{undefined}$$

$$1f. \sin \theta = 0 \quad \cos \theta = -1 \quad \tan \theta = 0$$

$$2a. \sin \theta = \frac{12}{13} \quad \tan \theta = -\frac{12}{5}$$

$$2b. \sin \theta = -\frac{1}{4} \quad \tan \theta = \frac{1}{\sqrt{15}} \text{ or } \frac{\sqrt{15}}{15}$$

$$2c. \sin \theta = -\frac{3}{\sqrt{13}} \text{ or } -\frac{3\sqrt{13}}{13} \quad \cos \theta = -\frac{2}{\sqrt{13}} \text{ or } -\frac{2\sqrt{13}}{13}$$

$$2d. \cos \theta = \frac{\sqrt{7}}{4} \quad \tan \theta = -\frac{3}{\sqrt{7}} \text{ or } -\frac{3\sqrt{7}}{7}$$

$$2e. \sin \theta = \sqrt{1-a^2} \quad \tan \theta = -\frac{\sqrt{1-a^2}}{a}$$