

W4 - Reciprocal Trig Ratios

MCR3U

Jensen

1) Determine the measure of each angle, to the nearest degree, if the angles are in the first quadrant.

a) $\cot A = 7$

b) $\sec B = \frac{7}{3}$

c) $\csc C = \frac{11}{8}$

2) Determine the exact expressions for the six trigonometric ratios for 315° . Hint: Draw a diagram of the angle in standard position. Then use special triangles to determine the exact values.

3) Find the measure, to the nearest degree, of an angle in the first quadrant that satisfies each ratio. If there is no such angle, explain why.

a) $\sin A = \frac{2}{3}$

b) $\cos B = \frac{3}{5}$

c) $\csc D = \frac{9}{8}$

d) $\sec E = \frac{4}{3}$

e) $\csc G = -\frac{4}{3}$

f) $\sec H = \frac{2}{5}$

4) Solve each of the following equations for $0^\circ \leq \theta \leq 360^\circ$. Round answers to the nearest degree.

a) $\sec \theta = -\sqrt{2}$

b) $\cot \theta + 1 = 0$

c) $\csc \theta = 3$

5) Each point lies on the terminal arm of an angle in standard position. Determine exact expressions for the six trigonometric ratios for the angle.

a) $P(-5, 12)$

b) $T(9, 40)$

c) $V(5, -3)$

Answers

1) a) $A = 8^\circ$ b) $B = 65^\circ$ c) $C = 47^\circ$

2) $\sin 315^\circ = -\frac{1}{\sqrt{2}}$ $\cos 315^\circ = \frac{1}{\sqrt{2}}$ $\tan 315^\circ = -1$
 $\csc 315^\circ = -\sqrt{2}$ $\sec 315^\circ = \sqrt{2}$ $\cot 315^\circ = -1$

3) a) 42° b) 53° c) 63° d) 41° e) no solution f) no solution

4) a) 135° and 225° b) 135° and 315° c) 19° and 161°

5) a) $\sin \theta = \frac{12}{13}$ $\cos \theta = \frac{-5}{13}$ $\tan \theta = \frac{12}{-5}$
 $\csc \theta = \frac{13}{12}$ $\sec \theta = \frac{13}{-5}$ $\cot \theta = \frac{-5}{12}$
 $\csc \theta = \frac{13}{12}$ $\sec \theta = \frac{13}{-5}$ $\cot \theta = \frac{-5}{12}$

b) $\sin \theta = \frac{40}{41}$ $\cos \theta = \frac{9}{41}$ $\tan \theta = \frac{40}{9}$
 $\csc \theta = \frac{41}{40}$ $\sec \theta = \frac{41}{9}$ $\cot \theta = \frac{9}{40}$

c) $\sin \theta = \frac{-3}{\sqrt{34}}$ $\cos \theta = \frac{5}{\sqrt{34}}$ $\tan \theta = -\frac{3}{5}$
 $\csc \theta = \frac{\sqrt{34}}{-3}$ $\sec \theta = \frac{\sqrt{34}}{5}$ $\cot \theta = \frac{5}{-3}$
 $\csc \theta = -\frac{\sqrt{34}}{3}$ $\sec \theta = \frac{\sqrt{34}}{5}$ $\cot \theta = -\frac{5}{3}$