

Problem 4. Given the value of one trig function and an angle find the values of the other five trig functions with the same angle. $\sec(\theta) = -5$ $\pi/2 < \theta < \pi$

$$\sec \theta = -5 \quad \frac{1}{\cos \theta} = -5$$

$$\cos \theta = \frac{-1}{5} = \frac{x}{r}$$

$$\sin \theta = \frac{y}{r}$$

$$x = -1, y = ? \quad r = 5$$

$$x^2 + y^2 = r^2$$

$$1 + y^2 = 25$$

$$y^2 = 24$$

$$y = \sqrt{24}$$

$$\sin \theta = \frac{\sqrt{24}}{5}$$

$$\csc \theta = \frac{5}{\sqrt{24}} \cdot \frac{\sqrt{24}}{\sqrt{24}} = \frac{5\sqrt{24}}{24} = \frac{10\sqrt{6}}{24} = \frac{5\sqrt{6}}{12}$$

$$\tan \theta = \frac{\sqrt{24}}{-1} = -\sqrt{24}$$

$$\cot \theta = \frac{-1}{\sqrt{24}} = \frac{\sqrt{24}}{\sqrt{24}} = \frac{-\sqrt{24}}{24} = \frac{-2\sqrt{6}}{24} = \frac{-\sqrt{6}}{12}$$