

1. Given that $\cos(x) = \frac{1}{5}$ find the following. (Assume $0 \leq x \leq \frac{\pi}{2}$.) (5 pts)

$$\sin(x) =$$

$$\tan(x) =$$

$$\sec(x) =$$

$$\csc\left(\frac{\pi}{2} - x\right) =$$

2. Use trigonometric identities to transform the left side of the equation into the right side. (Assume $0 \leq x \leq \frac{\pi}{2}$.) Show all steps! (3pts)

$$\tan(x) \csc(x) = \sec(x)$$

3. Evaluate using any technique. (2pts)

$$\sin\left(\frac{7\pi}{4}\right) =$$

Bonus: If the number of lily pads in a pond is doubling every day, and the pond is entirely covered with lily pads after 28 days, how long did it take the pond to be half covered? (1 pt)