

Quiz 01 – Solutions

Math 140-002: Calculus I (Spring 2026)

Week 1 (Jan 12–Jan 16, 2026)

Relevant topics: Functions, inverse functions, trigonometric review, exponential and logarithmic expressions

1. **Problem.** Given $\tan(x) = \frac{3}{4}$ with x in Quadrant I, find $\sec(x)$.

Solution. Use $1 + \tan^2(x) = \sec^2(x)$:

$$\sec^2(x) = 1 + \left(\frac{3}{4}\right)^2 = \frac{25}{16} \quad \Rightarrow \quad \sec(x) = \frac{5}{4}.$$

2. **Problem.** Evaluate exactly: $\cos(\arcsin(2/3))$.

Solution. $\sqrt{5}/3$.

3. **Problem.** Simplify using log rules: $\ln(x^2 e^3)$ (assume $x > 0$).

Solution. $2 \ln x + 3$.

4. **Problem.** Solve for x : $3^{2x-1} = 81$.

Solution. $x = 5/2$.