

1. **3pts.** Let $y(x) = \tan(\ln x)$. Find $\frac{dy}{dx}$.

2. **3pts.** Suppose $v(t) = \frac{1}{1 + \sec^2(t)}$. Find $v'(t)$.

3. **4pts.** Find a formula for a function h with $h'(x) = e^{3x} + 8x^3 - 2 + \frac{1}{x} + \sec(x) \tan(x)$ for $0 < x < \frac{\pi}{2}$.