

1. (5 points) Differentiate the function  $f(x) = \frac{\sin(x)}{x^2}$ . Simplify your answer.

$$\begin{aligned} f'(x) &= \frac{x^2 \cos x - 2x \sin x}{(x^2)^2} \\ &= \frac{x(x \cos x - 2 \sin x)}{x^4} \\ &= \frac{x \cos x - 2 \sin x}{x^3} \end{aligned}$$

2. (5 points) Differentiate the function  $g(\theta) = e^\theta \sec(\theta)$ . Simplify your answer.

$$\begin{aligned} g'(\theta) &= e^\theta \sec \theta \tan \theta + e^\theta \sec \theta \\ &= e^\theta \sec \theta (\tan \theta + 1) \end{aligned}$$