Math 30 – Workshop #12

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1. Differentiate the following.

   (a) $f(x) = x^2 \sec x$

   (b) $g(x) = \dfrac{1 + \tan x}{\cos x}$

   (c) $h(x) = e^x \cos x$

   (d) $k(x) = \dfrac{1 + \sin x}{1 + \cos x}$

2. Find an equation for the line through the point $(1, -5)$ that is parallel to the tangent line to the graph of $f(x) = 3x + x \tan x$ at $x = 0$.

3. Differentiate the following.

   (a) $g(x) = \dfrac{1 + \sin x \cos x}{x^2 - \tan x}$

   (b) $h(x) = \dfrac{\sin x}{1 + \sin x}\left(2 + \dfrac{3 - \cos x}{\cos x}\right)$

4. Find an equation for the tangent line to the graph of $k(x) = \dfrac{x + x \sin x}{1 + \cos x} - 1$ at $x = 0$.