MA104 - Differential Calculus
Derivative Practice

1. Easy

   (a) $g(x) = 10x^3 + 4$

   (b) $f(t) = e^5 + \pi + 3 + t^3$

   (c) $h(z) = 14\ln(z) + \dfrac{12}{z}$

   (d) $f(x) = xe^5$

   (e) $g(t) = 12\sin(t) - \sec(t)$

2. Medium

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

   (b) $g(t) = \dfrac{t^2}{3 - t^4}$

   (c) $h(z) = (z^3 + \ln(z) + 1)(\tan(z))$

   (d) $f(x) = \dfrac{ae^x + \sqrt[4]{x}}{1 + x}$

   (e) $g(x) = \csc(20x) + e^{2x^2}$

   (f) $f(t) = \ln(2t + t^2) + \dfrac{1}{(t^2 + 4)^2}$

3. Tough

   (a) $g(x) = \sin(\tan(x^2))$

   (b) $f(t) = \dfrac{15\cos(\pi t)}{(t^2 - 5)^3}$

   (c) $h(x) = (\sqrt[3]{x} - 2)(x^3 + x + e)^{100} - x^e$

   (d) $f(x) = \sec^3\left(\dfrac{1}{x}\right) + \sin(\pi)$

   (e) $g(x) = \ln(x\sqrt{x^3 + x})$