1. Find the derivative of each of the following functions:
    a. $f(x) = (4x + 1)^3(5x + 3)^{-2}$

    b. $g(x) = (3x^2 - 6x + 6)e^{-3x}$

    c. $h(x) = \dfrac{9e^{5x}}{8x - 3}$

    d. $f(x) = 5^x(x^2 + 1)$

e. $q(x) = \ln(\ln(12x))$

f. $p(x) = e^{x\sqrt{5x-16}}$

g. $f(x) = e^{e^{x}}$

h. $h(x) = \pi^{e^{e^{2\pi}}}x$