Sharjah Institute of Technology

معهد الشارقة للتكنولوجيا
SHARJAH INSTITUTE OF TECHNOLOGY

Differentiation Rules - Tutoring Sheet #13

1. Find the derivative of the following functions:

a. $f(x) = (2x - 3)^5$

b. $f(x) = \dfrac{5 - 3x}{4x - 1}$

c. $f(x) = \dfrac{3}{x^2 + 1}$

d. $f(x) = \dfrac{x^2 - 3x + 1}{x^2 + x - 2}$

e. $f(x) = x^2 e^x$

f. $f(x) = (x^2 - 1)\ln x$

g. $f(x) = \dfrac{\ln x}{x}$

h. $f(x) = \dfrac{\sin x}{x}$

i. $f(x) = x^2 \cos x$

j. $f(x) = \sqrt{x^2 + 3}$

k. $f(x) = \ln(x^2 + x + 2)$

l. $f(x) = \dfrac{e^x + 1}{e^x - 1}$

m. $f(x) = \dfrac{x^2 + 1}{\sqrt{3x - 1}}$

n. $f(x) = \ln\left(\dfrac{1 + x}{1 - x}\right)$

2. Find the derivative of $f(x) = (1 + 2x)e^{-x^2}$
find the value of x that makes $f'(x) = 0$

3. Find the derivative of $f(x) = x^2 - \ln(\sqrt{2}x)$
find the value of x that makes $f'(x) = 0$