MATH1100 – QUIZ 7

NAME:

(5 points each) Find the indicated derivative:

a) If $y = e^{3x^2 - x}$, find $\frac{dy}{dx}$.

$y = e^{3x^2 - x}$

$y' = e^{3x^2 - x}(6x - 1)$

b) If $g(x) = \ln\left(\frac{x}{x^3 + 5x^2}\right)$, find g'(x).

$g(x) = \ln x - \ln(x^3 + 5x^2)$

$g'(x) = \frac{1}{x} - \frac{1}{x^3 + 5x^2}(3x^2 + 10x)$

c) If $f(x) = 4e^{x^3} + 5e^{2x} + 4e^{-x} + 12$, find f'(x).

$f(x) = 4e^{x^3} + 5e^{2x} + 4e^{-x} + 12$

$f'(x) = 4e^{x^3}(3x^2) + 5e^{2x}(2) + 4e^{-x}(-1)$

$= 12x^2 e^{x^3} + 10e^{2x} - 4e^{-x}$

d) If $y = \frac{\ln(x)}{x}$, find y'.

$y' = \frac{x \cdot \frac{1}{x} - \ln x \,(1)}{x^2} = \frac{1 - \ln x}{x^2}$