Solutions

MATH 122: QUIZ 5 SECTIONS 3.1-3.3

Name: _____

1 (5 points). *Find the equation of the tangent line to the curve*

$$f(x) = 3x^2 - 4x + 3$$

at $x = 2$.

$m = f'(2)$

$f'(x) = 6x - 4$

$m = f'(2) = 6(2) - 4 = 8$

$f(2) = 3(2)^2 - 4(2) + 3$

$= 7$

$(2, 7)$

$\boxed{y - 7 = 8(x-2)}$

2 (5 points). *Differentiate the following:*

a) $f(x) = 2x^3 - x^1$

$f'(x) = 6x^2 - 4x^3$

b) $h(x) = (e^x + e^{-x})^{-1}$

$u = e^x + e^{-x}$ $u' = e^x - e^{-x}$ $h'(x) = f'(u) \cdot u'$

$f(u) = u^{-1}$ $f'(u) = -u^{-2}$ $= -u^{-2}(e^x - e^{-x})$

$= -(e^x + e^{-x})^{-2}(e^x - e^{-x})$