

MATH 202 Quiz 2 – Version B

September 1, 2015

Name: ANSWERS

Instructions: No calculators! Use your own scrap paper and write your answers in the space provided.

1. State the following rules (equations); using f and g (functions of x) to illustrate:

(a) The chain rule: $\frac{d}{dx} f(g(x)) = f'(g(x)) \cdot g'(x)$ (b) The power rule: $\frac{d}{dx} X^n = nX^{n-1}$

(c) The quotient rule: $\frac{d}{dx} \left(\frac{f}{g}\right) = \frac{f'g - fg'}{g^2}$ (d) The product rule: $\frac{d}{dx} (fg) = f'g + fg'$

2. Find y' :

(a) $2x^3y^2 - y \cos x = 4x^3$ $y' = \frac{6x^2y^2 + y \sin x - 12x^2}{4x^3y - \cos x}$ (b) $y = \frac{5x^4}{\sqrt[3]{3x-1}}$ $y' = \frac{x^3(57x-20)}{(3x-1)^{6/5}}$

(c) $y = \frac{5x^6 - x \cos x}{\pi^e}$ $y' = \frac{30x^5 - \cos x + x \sin x}{\pi^e}$

or
 $y = 5x^4(3x-1)^{-1/5}$
 $\Rightarrow y' = 20x^3(3x-1)^{-1/5} - 3x^4(3x-1)^{-6/5}$

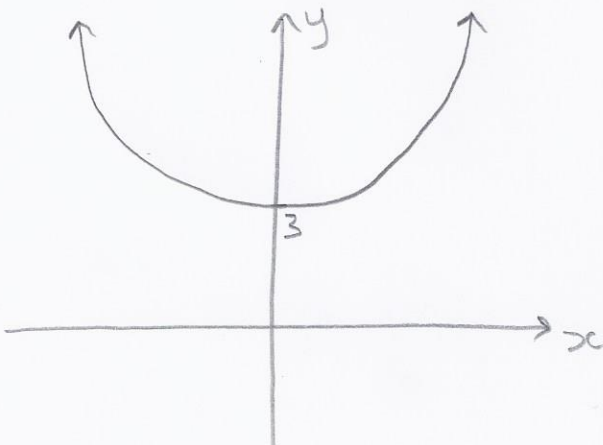
3. Integrate:

(a) $\int \frac{2x^3 + 5x^2 - 2}{\sqrt{x}} dx = \frac{4}{7}x^{7/2} + 2x^{5/2} - 4x^{1/2} + C$ (b) $\int x^2(7x^3 - 6)^8 dx = \frac{(7x^3 - 6)^9}{189} + C$

(c) $\int \cos(\sin x) \cos x dx = \sin(\sin x) + C$

4. Sketch the following functions (do a mini sketch under the function's name):

(a) $y = 3 + x^2$



(b) $y = 16x - x^3$

