

MATH 202 Quiz 2 – Version A

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 product rule: $\frac{d}{dx}(fg) = f'g + fg'$ (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 chain rule: $\frac{d}{dx}f(g(x)) = f'(g(x)) \cdot g'(x)$

2. Find y' :

(a) $x^2y + x \sin y = 2x^2$ $y' = -\frac{2xy + \sin y - 4x}{x^2 + x \cos y}$ (b) $y = \frac{7x^2}{\sqrt[3]{2x+1}}$ $y' = \frac{14x(5x+3)}{3(2x+1)^{4/3}}$

(c) $y = \frac{12x^3 - x \sin x}{e^\pi}$ $y' = \frac{36x^2 - \sin x - x \cos x}{e^\pi}$

or
 $y = 7x^2(2x+1)^{-1/3}$
 $\Rightarrow y' = 14x(2x+1)^{-1/3} - \frac{14x^2}{3}(2x+1)^{-4/3}$

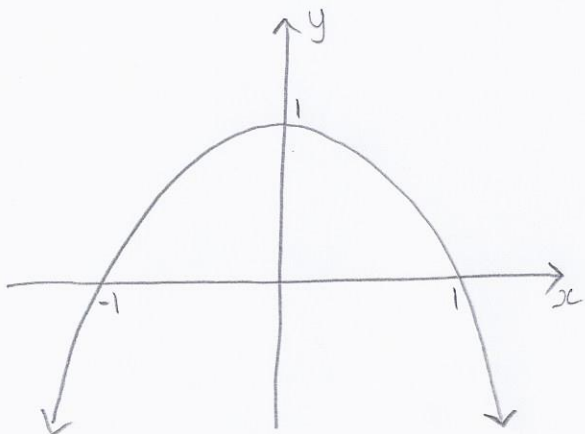
3. Integrate:

(a) $\int \frac{7x^2 - 2x - 5}{\sqrt{x}} dx = \frac{14}{5}X^{5/2} - \frac{4}{3}X^{3/2} - 10X^{1/2} + C$ (b) $\int x^3(5x^4 - 6)^{10} dx = \frac{(5x^4 - 6)^{11}}{220} + C$

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

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

(a) $y = 1 - x^2$



(b) $y = x^3 - 4x$

