The University of Western Australia

SCHOOL OF MATHEMATICS AND STATISTICS

MATH1050 Calculus C

Tutorial 9 (ctd), Semester 2 2010 Solutions

1. What is the derivative of:
   We need to apply: 
   \[ f'(x) = nx^{n-1} \]

   (a) \( f'(x) = 2x \)
   (b) \( f'(x) = 2x \)
   (c) \( f'(x) = 3x^2 \)
   (d) \( f'(x) = 4x^3 \)
   (e) \( f'(x) = 9x^8 \)
   (f) \( f'(x) = 513x^{5/2} \)
   (g) \( f'(x) = 0.5x^{-1/2} \)
   (h) \( f'(x) = \frac{3}{2}x^{1/2} \)
   (i) \( f'(x) = 0.5x^{-1/2} \)
   (j) \( f'(x) = \frac{1}{2} \)
   (k) \( f'(x) = -\frac{1}{2}x^{-3/2} \)
   (l) \( f'(x) = -\frac{3}{2}x^{-5/2} \)
   (m) \( f'(x) = \frac{2}{2} \)
   (n) \( f'(x) = \frac{-3}{2\sqrt{x}} \)
   (o) \( f'(x) = \frac{-\sqrt{2}}{\sqrt{x}} \)
   (p) \( f'(x) = \frac{-\pi}{\pi} \)

2. What is the derivative of:
   We need to apply: 
   \[ f(x) = a \times g(x) \quad f'(x) = a \times g'(x) \]

   (a) \( f'(x) = 10x \)
   (b) \( f'(x) = 6x \)
   (c) \( f'(x) = x^{-1/2} \)
   (d) \( f'(x) = \frac{27}{2}x^{1/2} \)
   (e) \( f'(x) = \frac{5}{\sqrt{x}} \)
   (f) \( f'(x) = \frac{-2}{5} \)

3. What is the derivative of: We need to differentiate each term of the sum. And constants result in a zero.

   (a) \( f'(x) = 10x - 1 - \frac{1}{2x^{1/2}} \)
   (b) \( f'(x) = 3x^2 + x^{-4/5} - \frac{7}{5x^{7/5}} \)
   (c) \( f'(x) = -12x^{-4} + 10 - \frac{3}{2}x^{-5/2} + \frac{1}{2x^{1/2}} \)
   (d) \( f'(x) = 9x^8 + \frac{2\pi}{5x^{7/5}} - \frac{1}{2x^{1/2}} \)