Math 104 90A[1] September, 20th, 1999. Worksheet 3
http://www.math.ubc.ca/~ athreya/104

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1. Find the derivative of each of the following functions, using the rules of differentiation defined so far. For each question state the rules that you use.
   (a) $y = 3$
   (b) $f(x) = \sqrt{x}$
   (c) $f(x) = 16x^3$
   (d) $y = x^{-\frac{1}{3}} + 120$

2. An economist reports to Molson-brewery that the average-cost ($\bar{c}$) for producing q pints of beer is given by

$$\bar{c} = 0.0001q^2 - 3q^{-\frac{5}{3}} + 15 + \frac{5000}{q}.$$

   The chief drinking officers at Molson are concerned about the following issues:
   (a) The total cost for producing q pints of beer.
   (b) The economist says in the report "... control production by calculating Marginal cost....".

   With beer flowing freely, total cost, marginal cost and the significance of it all are beyond them. Fortunately you are the designated driver at Molson. Help !

3. Find the derivative of each of the following functions:
   (a) $f(x) = x^5 - 6x^4 - 3x^2 + 7x + 120$
   (b) $s = f(t) = 1 - t^3 + 2t\sqrt{t}$

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[1] **Office hours:** Monday: 1:45-3:15pm, Tuesday:3:30-5:30pm, Wednesday 2:15-3:15pm