# Quiz 4
# TQS 211

You are welcome to use any written homework from Chapter 3, worksheets you completed, and a calculator but no books or class notes. Show *all* your work (algebraically or geometrically) for each and simplify. No credit is given without supporting work.

1. Find the derivative of the following functions:

   (a) [4] $\alpha(t) = -2t^2 + \dfrac{6}{\sqrt{t}} - \dfrac{1}{t^3}$

   (b) [4] $\beta(x) = \sqrt{x}(x^3 + x^{\frac{1}{2}})$

   (c) [3] $\gamma(y) = 2^y + y^2 - 2$

(d) [3] $\delta(x) = 7 \ln x + \pi e^x$

2. The cost function of a company is unknown but increasing production from 100 units to 101 units increased costs from \$1500 to \$1550.

   (a) [1] Estimate the marginal cost at 100 units.

   (b) [3] Find the linear function that will approximate the cost function for values near 100, that is, find the equation for the line tangent to the Cost function at 100.

   (c) [2] Use (b) to estimate the cost of producing 118 units.