

**EG02041 Advanced Mathematics**  
**Feedback Quiz (1): Differentiation**  
**Total Points 10**

**Name:**

**ID:**

**Exercise:** *Growth of baby.* The median weight of a boy whose age  $t$  is between 0 and 36 mo can be approximated by the function

$$w(t) = 8.15 + 1.82t - 0.0596t^2 + 0.000758t^3,$$

Where  $t$  is measured in months and  $w$  is measured in pounds. Use this approximation to make the following computations for a boy with median weight.

- a) The rate of change of weight with respect to time.
- b) The weight of the boy at birth
- c) The rate of change of the weight of the boy at birth
- d) The weight of the boy on his first birthday
- e) The rate of change of the boy's weight during his first birthday
- f) The average rate of change of the boy's weight during his first year of life
- g) A time when the instantaneous rate of change is the same as the average rate of change over the first year.

**Exercise:** Compute the derivative.

a)  $\frac{d}{dx}(x \tan x)$

b)  $\frac{d}{dx}\left(\frac{\sec x + \csc x}{x}\right)$