Quiz 7

## MATH-1150-ES32

## 2011 October 19

**1** Let f be the function such that

 $f(x) = 4x^3$ 

for all possible x. Is f even, odd, or neither? (Either show what calculation you make to decide this, or draw a graph that shows your answer.)

First,

$$f(-x) = 4(-x)^3 = 4(-x^3) = -4x^3;$$

next,

$$-f(x) = -(4x^3) = -4x^3.$$

These are the same, so f is **odd**.

**2** Let g be the function given by

$$g(x) = x^2 - 2$$

What is the average rate of change of g from -2 to 1? (Show what numerical calculation you make.) First,

$$g(-2) = (-2)^2 - 2 = 4 - 2 = 2$$

next,

$$g(1) = (1)^2 - 2 = 1 - 2 = -1.$$

Therefore, the average rate of change is

$$\frac{g(1) - g(-2)}{(1) - (-2)} = \frac{-1 - 2}{1 + 2} = \frac{-3}{3} = -1.$$

**3** Let h be the function shown in Exercises 3.3.11-20 of the textbook.

a How many local maxima does h have?

It has 2 local maxima. (See (-2, 6) and (2, 10) on the graph.)

b For each local maximum of h, state where it is and what it is.

One local maximum is at -2; it is 6. The other local maximum is at 2; it is 10.