MCS 119
Derivative Review

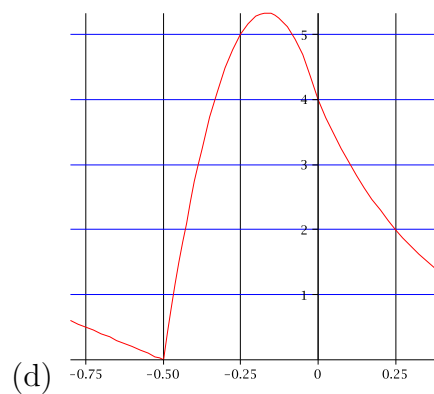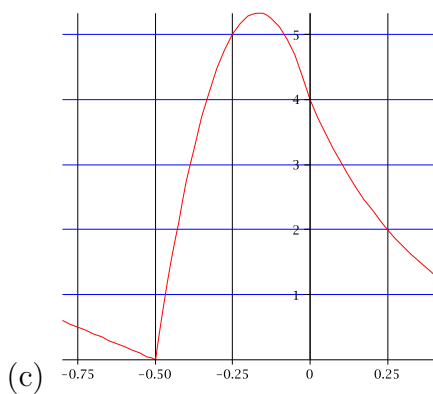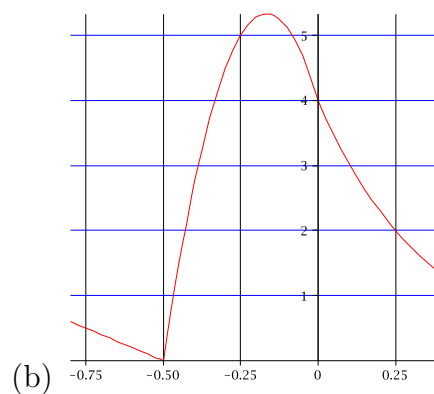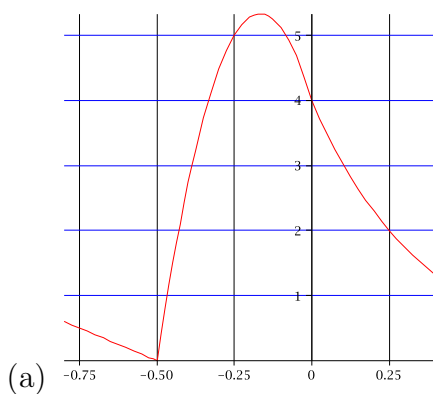1. Here is the graph of a function $y = f(x)$, repeated several times. Estimate the following derivatives:
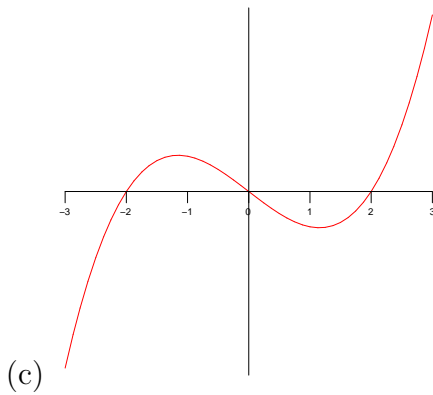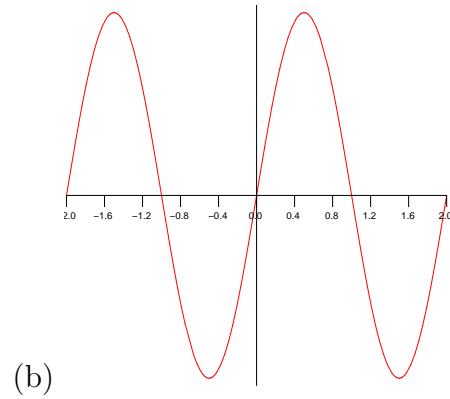
   (a) $f'(0.25)$
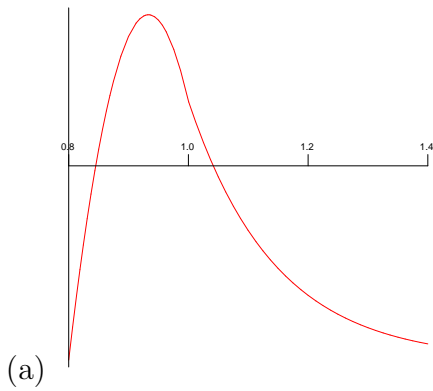
   (b) $f'(0)$

   (c) $f'(-.25)$

   (d) $f'(-.50)$

(a)

(b)

(c)

(d)

2. Here are the graphs of some functions. Sketch the graphs of their derivatives. Clearly indicate where the derivative is positive, negative, or zero.

(a)

(b)

(c)

3. Suppose $y = f(x)$. What is the formal definition of the derivative of $f'(x)$? Find the

derivative of $y = 2x - x^2$ using the formal definition.

4. Using the table below, find the approximate values of $f'(x)$ at each of the x-values. Where is the derivative of $f(x)$ positve? Negative? Where does the rate of change seem to be greatest?

x	0	1	2	3	4	5	6	7	8
$f(x)$	18	13	10	9	9	11	15	21	30

5. Tom and Barbara have travelled to the planet Sym. Barbara has climbed out of the spaceship and is exploring the surface of the planet when Tom decides to throw a ripe avocado out. The position of the avocado is given by $s(t) = -2.3t^2 + 3t + 52$. What is the velocity of the avocado when it hits the surface of the planet?