Mathematics 122

You must show your work to get full credit.

1. The graph of $y = f(x)$ is given in Figure 1.

FIGURE 1

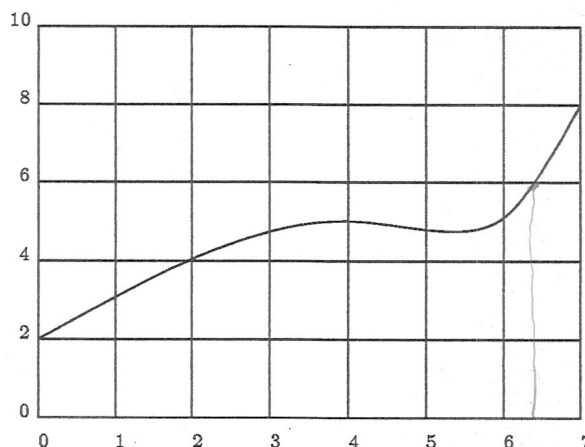(a) What is $f(2)$? $f(2) =$ ___4___

(b) Solve $f(x) = 6$. $x =$ ___6.5___ (approximately)

(c) What is the average rate of change between $x = 2$ and $x = 4$?

$$\frac{\Delta y}{\Delta x} = \frac{f(4) - f(2)}{4 - 2} = \frac{5 - 4}{4 - 2} = \frac{1}{2} = .5$$ Average rate is ___$\frac{1}{2} = .5$___

2. If $y = f(x)$ is given in the following table

x	1.0	1.2	1.4
$f(x)$	3.1	2.7	2.1

then what is the average rate of change between $x = 1.2$ and $x = 1.4$?

$$\frac{\Delta y}{\Delta x} = \frac{f(1.4) - f(1.2)}{1.4 - 1.2} = \frac{2.1 - 2.7}{1.4 - 1.2} = \frac{-.6}{.2}$$ Average rate is ___-3___

$$= -3$$

3. If $f(x) = 3x^2$ what is the average rate of change between $x = 2$ and $x = 2.1$.

Average rate is ___12.3___

$$\frac{\Delta y}{\Delta x} = \frac{f(2.1) - f(2)}{2.1 - 2}$$

$$= \frac{3(2.1)^2 - 3(2)^2}{2.1 - 2} = 12.3$$