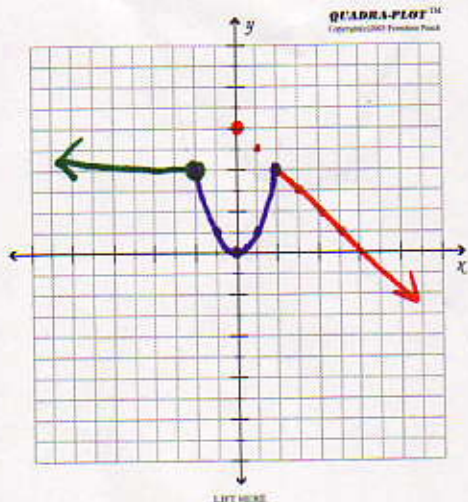


SEC. 3.3

INCREASING & DECREASING INTERVALS AND AVERAGE RATE OF CHANGE

1.



CONSTANT (HORIZONTAL) $(-\infty, -2]$

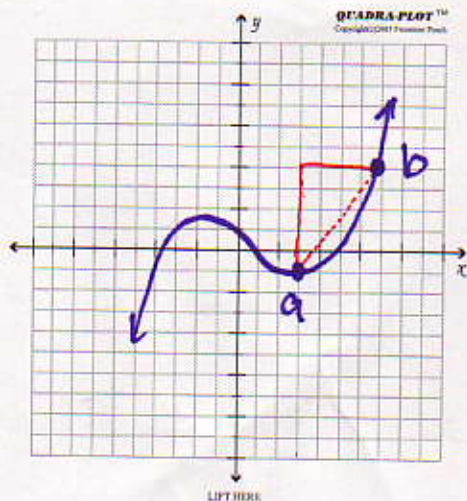
INCREASING (RISES) $[0, 2]$

DECREASING (FALLS) $[-2, 0] \text{ \& } [2, \infty)$

2. AVERAGE RATE OF CHANGE

$$\frac{f(b) - f(a)}{b - a}$$

WHEN $a < b$



EXAMPLE

19. $h(t) = t^2 + 2t$ $t = -1$ $t = 4$

$$h(4) = 4^2 + 2(4) = 24$$

$$h(-1) = (-1)^2 + 2(-1) = -1$$

$$\frac{f(b) - f(a)}{b - a}$$

$$\frac{24 - (-1)}{4 - (-1)} = \frac{25}{5}$$

$$5$$

#21.

$$f(x) = x^3 - 4x^2$$

$$x = \overset{a}{0}, \quad x = \overset{b}{10}$$

$$f(b) = f(10) = 10^3 - 4 \cdot 10^2$$

$$1000 - 400$$

$$600 = f(b)$$

$$f(a) = f(0) = 0^3 - 4 \cdot 0^2 = 0 = f(a)$$

$$\frac{f(b) - f(a)}{b - a}$$

$$\frac{600 - 0}{10 - 0}$$

$$\frac{600}{10} \quad \boxed{60}$$