MATH 195

§2.3 GETTING INFORMATION FROM THE GRAPH OF A FUNCTION

5, 7-10, 31-34, 43-46, 55, 57

JOHN ADAMSKI

6/21/2016

5. (i) x (iii) 1 (v) $[1, 7]$

(ii) x (iv) 7

7. (a) $h(-2) = 1$
$h(0) = -1$
$h(2) = 3$
$h(3) = 4$

(b) DOMAIN = $[-3, 4]$
RANGE = $[-1, 4]$

(c) $x = -3, 2, 4$

(d) $[-3, 2] \cup \{4\}$

(e) $h(3) - h(-3)$
$= 4 - 3 = \boxed{1}$

8. (a) $g(-4) = 3$
$g(-2) = 2$
$g(0) = -2$
$g(2) = 1$
$g(4) = 0$

(b) DOMAIN = $[-4, 4]$
RANGE = $[-2, 3]$

(c) $x = -4$

(d) $[-1, 1.75] \cup \{4\}$

(e) $f(2) - f(-1) = 1 - 0 = \boxed{1}$

9. (a) $\boxed{f(0) = 3} > g(0) = \frac{1}{2}$

(b) $f(-3) = -1 < \boxed{g(-3) = 2}$

(c) $\boxed{x = -2, 2}$ (INTERSECTIONS)

(d) $\boxed{[-4, -2] \cup [2, 4]}$

(e) $\boxed{(-2, 2)}$

10. (a) $f(6) = 3.5 < \boxed{g(6) = 5.5}$

(b) $\boxed{f(3) = 6} > g(3) = 3$

(c) $\boxed{x = 2, 5, 7}$

(d) $\boxed{[1,2] \cup [5,7]}$

(e) $\boxed{(2,5) \cup (7,8)}$

31. (a) DOMAIN: $[-1, 4]$
RANGE: $[-1, 3]$

(b) INCREASING: $[-1,1] \cup [2,4]$
DECREASING: $[1,2]$

32. (a) DOMAIN: $[-2, 3]$
RANGE: $[-2, 3]$

(b) INCR: $[0,1]$
DECR: $[-2,0] \cup [1,3]$

33. (a) DOMAIN: $[-3, 3]$
RANGE: $[-2, 2]$

(b) INCR: $[-2,-1] \cup [1,2]$
DECR: $[-3,-2] \cup [-1,1] \cup [2,3]$

34. (a) DOMAIN: $[-2, 2]$
RANGE: $[-2, 2]$

(b) INCR: $[-1, 1]$
DECR: $[-2,-1] \cup [1,2]$

43. (a) LOCAL MAX VALUE 2 AT $x = 0$

LOCAL MIN VALUE -1 AT $x = -2$

LOCAL MIN VALUE 0 AT $x = 2$

(b) INCR: $[-2, 0] \cup [2, 4]$

DECR: $[-3.5, -2] \cup [0, 2]$

44. (a) LOCAL MAX VALUE 2 AT $x = -2$

LOCAL MIN VALUE -1 AT $x = 0$

LOCAL MAX VALUE 2 AT $x = 2$

(b) INCR: $[-4, -2] \cup [0, 2]$

DECR: $[-2, 0] \cup [2, 4.2]$

45. (a) LOCAL MIN VALUE -2 AT $x = -2$

LOCAL MAX VALUE 0 AT $x = 0$

LOCAL MIN VALUE -1 AT $x = 1$

LOCAL MAX VALUE 1 AT $x = 3$

(b) INCR: $[-2, 0] \cup [1, 3]$

DECR: $[-3.5, -2] \cup [0, 1] \cup [3, 5.2]$

46. (a) LOCAL MAX VALUE 3 AT $x = -2$

LOCAL MIN VALUE 0 AT $x = -1$

LOCAL MAX VALUE 2 AT $x = 1$

LOCAL MIN VALUE -1 AT $x = 2$

(b) INCR: $[-3.75, -2] \cup [-1, 1] \cup [2, 4.2$

DECR: $[-2, -1] \cup [1, 2]$

55. (a) 6 AM $\Rightarrow t = 6$: 500 MEGAWATTS

6 PM $\Rightarrow t = 18$: 730 MEGAWATTS

(b) LOWEST AT $t = 3-4$ i.e. $\boxed{3-4 \text{ AM}}$

(c) JUST BEFORE $t = 12$, SAY $\boxed{11:50 \text{ AM}}$

57. (a) INCR: $[0, 30] \cup [32, 65]$

DECR: $[30, 32]$

(b) PERHAPS THEY STARTED EXERCISING & DIETING.

PERHAPS THEY GOT VERY SICK.

(c) $W(20) - W(10) = 150 - 50 = \boxed{100}$