Key

Chapter 1 Practice Test – ANSWERS

1) Circle One: Yes (No) Explain: $f(x)$ DOES NOT PASS THE HORIZONTAL LINE TEST

2) Circle One: (Max) Min. $(-3, -2)$

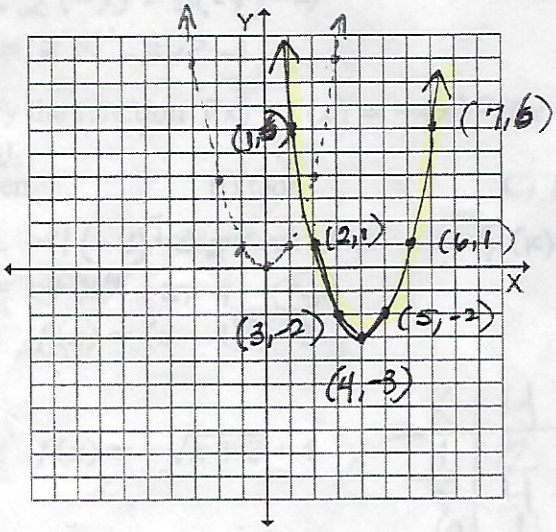
3) Inc: $(-\infty, -3)$ Dec. $(-3, \infty)$ Constant: NONE

4) Domain: $(-\infty, \infty)$ Range: $(-\infty, -2]$

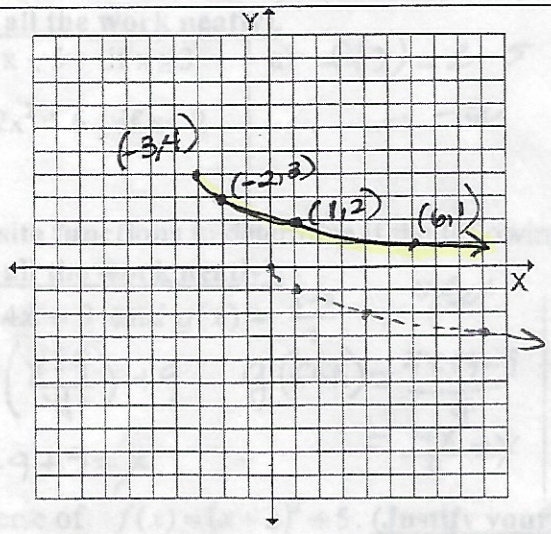
5) EVEN

6) Neither

7)



8)

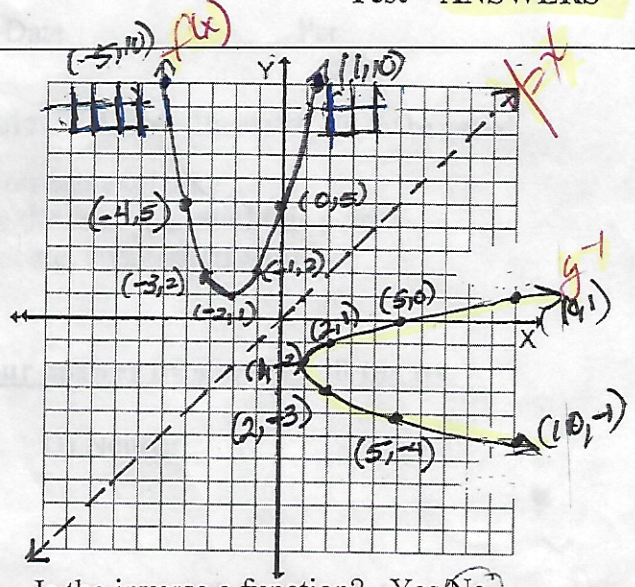


9) a) $f(3) = -2$ b) $f(0) = 6$ c) $f(-1) = 8$

10) a) (yes) no b) yes (no)

11) $y^{-1} = -2 \pm \sqrt{x-5}$

12)



Is the inverse a function? Yes (No)

13) a) $(3,-2), (-5,-6), (1,-8)$ b) $(3,2), (-5,6), (1,8)$

14) $A(x) = 4x^2 + 64x + 240$

15) $6x + 3h + 3$

16) $y = -\frac{7}{4}x - \frac{1}{4}$

17) $y = -5x - 14$

18) $y = -\frac{3}{2}x - \frac{3}{2}$

19) Av. Rate of Change $= 0$

20) $(-\infty, 0) \cup (0, 1) \cup (1, \infty)$

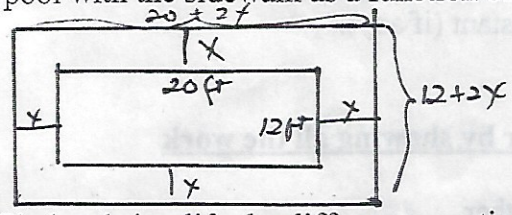
21) x-int $(-6, 0)$ y-int $(0, 2)$

3) Some of the points on the graph of f(x) are (-3,2), (5,6), and (-1,8).

a) If f(x) is an odd function, what points would also be on the same graph? $(x, y) \rightarrow (-x, -y)$

b) If f(x) is an even function, what points would also be on the same graph? $(x, y) \rightarrow (-x, y)$

4) Lola is building a sidewalk around her rectangular swimming pool. The sidewalk will have a uniform width throughout. The dimensions of the swimming pool are 20 feet by 12 feet. Express the area of the swimming pool with the sidewalk as a function of its width 'x'. **(Justify your answer by showing all the work neatly).**



$A(x) = (20+2x)(12+2x)$

$= 240 + 40x + 24x + 4x^2$

$A(x) = 4x^2 + 64x + 240$

5) Find and simplify the difference quotient $\frac{f(x+h)-f(x)}{h}$, $h \neq 0$, for $f(x) = 3x^2 + 3x - 5$. **(Justify your answer by showing all the work neatly).**

$$\frac{f(x+h)-f(x)}{h} = \frac{3(x+h)^2+3(x+h)-5-3x^2-3x+5}{h} = \frac{3x^2+6xh+3h^2+3x+3h-5-3x^2-3x+5}{h}$$

$$= \frac{6xh+3h^2+3h}{h} = \frac{h(6x+3h+3)}{h} = 6x+3h+3$$

roblem 16 – 18: Write the equation of a line in slope-intercept form for the line with the given information: Justify your answer by showing all the work neatly).

6) Passing through (−3,5) and (1, −2).

$m = \frac{5+2}{-3-1} = \frac{7}{-4}$ $\quad y = -\frac{7}{4}x + b$

$-2 = -\frac{7}{4}(1) + b$ $\quad -2 + \frac{7}{4} = b$

$= -\frac{8}{4} + \frac{7}{4} = b$

$b = -\frac{1}{4}$

$\boxed{y = -\frac{7}{4}x - \frac{1}{4}}$

7) Parallel to $y = -5x + 2$ and passing through (−4, 6).

$y = -5x + b$

$6 = -5(-4) + b$

$6 = 20 + b$

$-14 = b$

$\boxed{y = -5x - 14}$

8) Perpendicular to $y = \frac{2}{3}x - 4$ and passing through (1, −3).

$y = -\frac{3}{2}x + b$

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

$-3 + \frac{3}{2} = b$

$-\frac{6}{2} + \frac{3}{2} = b$; $b = \frac{-3}{2}$

$\boxed{y = -\frac{3}{2}x - \frac{3}{2}}$

9) Find the average rate of change of $f(x) = 3x^2 - 3x + 1$ from $x_1 = 3$ *to* $x_2 = -2$. **(Justify your answer by showing all the work neatly).**

$f(x_1) = f(3) = 3(3)^2 - 3(3) + 1$

$= 27 - 9 + 1$

$= 19$

$f(x_2) = f(-2) = 3(-2)^2 - 3(-2) + 1$

$= 12 + 6 + 1$

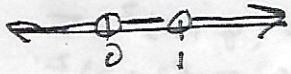
$= 19$

$ARC = \frac{19-19}{-2-3} = \boxed{0}$

0) Find the **domain** of the composite function f(g(x)) given $f(x) = \frac{-2}{x-3}$ and $g(x) = \frac{3}{x}$. **(Justify your answer by showing all the work neatly).**

$f(g(x)) = \frac{-2}{\frac{3}{x}-3} = \frac{-2}{\frac{3-3x}{x}} = -2 \cdot \frac{x}{3-3x} = \frac{-2x}{3-3x}$

$x \neq 0, x \neq 1$



1) Find the intercepts of the graph of the following equation: $-7x + 21y - 42 = 0$

x-INT: $y = 0$

$-7x = 42$

$x = -6$ $\quad (-6, 0)$

y-INT: $x = 0$

$21y = 42$

$y = 2$ $\quad (0, 2)$