

Best Wishes To:

Key

DATE: _____

HOUR: _____

Section 7.1-7.3 Quiz Form A

1) Given $f(x) = x^2 - 3x + 2$ and $g(x) = 2x + 4$ calculate each function:a) $(f + g)(x)$

$$x^2 - 3x + 2 + 2x + 4$$

$$\boxed{x^2 - x + 6}$$

b) $(f - g)(x)$

$$x^2 - 3x + 2 - 2x - 4$$

$$\boxed{x^2 - 5x - 2}$$

c) $(f \cdot g)(x)$

$$x^2(2x+4) - 3x(2x+4) + 2(2x+4)$$

$$2x^3 + 4x^2 - 6x^2 - 12x + 4x + 8$$

$$\boxed{2x^3 - 2x^2 - 8x + 8}$$

d) $(f \div g)(x)$

$$\frac{x^2 - 3x + 2}{2x + 4}$$

$$x \neq -2$$

$$2x + 4 = 0$$

$$2x = -4$$

$$x = -2$$

2) For each pair of functions, find $f \circ g$ and $g \circ f$ if they exist:a) $f(x) = \{(2,3), (4,4), (5,8)\}$ $g(x) = \{(2,4), (3,5), (4,2), (8,4)\}$

g	f
2 4	4
3 5	8
4 2	3
8 4	4

f	g
2 3	5
4 4	2
5 8	4

$$f \circ g = \underline{(2,4), (3,8), (4,3), (8,4)}$$

$$g \circ f = \underline{(2,5), (4,2), (5,4)}$$

b) $f(x) = \{(0,4), (5,2)\}$ $g(x) = \{(1,0), (4,5), (6,5), (7,0)\}$

g	f
1 0	4
4 5	2
6 5	2
7 0	4

$$f \circ g = \underline{(1,4), (4,2), (6,2), (7,4)}$$

$$g \circ f = \underline{(0,5)}$$

3) For the following find $[f \circ g](x)$ and $[g \circ f](x)$: $f(x) = x^2 + 2x - 1$ $g(x) = x - 4$

$$(x-4)^2 + 2(x-4) - 1$$

$$x^2 - 8x + 16 + 2x - 8 - 1$$

$$x^2 + 2x - 1 - 4$$

$$[f \circ g](x) = \underline{x^2 - 6x + 7}$$

$$[g \circ f](x) = \underline{x^2 + 2x - 5}$$

4) If $f(x) = 3x - 2$, $g(x) = x^2 + 1$, and $h(x) = 3x^2 + 11x - 4$, calculate each value:

a) $f[g(3)]$

$$g(3) = 9 + 1 = 10$$

$$f(10) = 30 - 2 =$$

$$\boxed{28}$$

b) $[f \circ h](-2)$

$$h(-2) = 3(4) - 26$$

$$= -14$$

$$f(-14) = 3(-14) - 2$$

$$= -42 - 2$$

$$\boxed{-44}$$

c) $[h \circ (f \circ g)](4)$

$$g(4) = 16 + 1 = 17$$

$$f(17) = 3(17) - 2 = 49$$

$$h(49) = (49)^2 + 1 = \boxed{2402}$$

5) Find the inverse of each relation:

a) $\{(-2, 5), (0, 4), (1, -8), (4, 7)\}$

$$(5, -2) (4, 0) (-8, 1) (7, 4)$$

b) $\{(2, -5), (6, 6), (-1, 3), (7, 9)\}$

$$(-5, 2) (6, 6) (3, -1) (9, 7)$$

6) Find the inverse of each function:

a) $g(x) = 3x + 2$

$$y = 3x + 2$$

$$x = 3y + 2$$

$$x - 2 = 3y$$

$$\boxed{y = \frac{1}{3}x - \frac{2}{3}}$$

$$f^{-1}(x)$$

b) $f(x) = \frac{1}{3}x - 3$

$$y = \frac{1}{3}x - 3$$

$$x = \frac{1}{3}y - 3$$

$$x + 3 = \frac{1}{3}y$$

$$\boxed{y = \frac{1}{3}x + 1}$$

$$f^{-1}(x)$$

7) Determine if each pair of functions are inverse functions or not:

a) $f(x) = -4x + 1$ and $g(x) = \frac{1}{4}(1 - x)$

$$-4\left(\frac{1}{4}(1-x) + 1\right) \quad \frac{1}{4}(1 - (-4x+1))$$

$$= -1(1-x) + 1 \quad \frac{1}{4} + x - \frac{1}{4}$$

$$= -1 + x + 1$$

$$= \underline{\underline{x}}$$

$\boxed{\text{Yes}}$

b) $f(x) = 13x - 13$ and $g(x) = \frac{1}{13}x - 1$

$$13\left(\frac{1}{13}x - 1\right) - 13 \quad \frac{1}{13}(13x - 13) - 1$$

$$x - 13 - 13$$

$$x - 1 - 1$$

$\boxed{\text{no}}$

8) Graph each function. State the domain, range, and the x and y-intercepts. You must include a table of values as part of your work:

a) $y = 2\sqrt{x-3}$

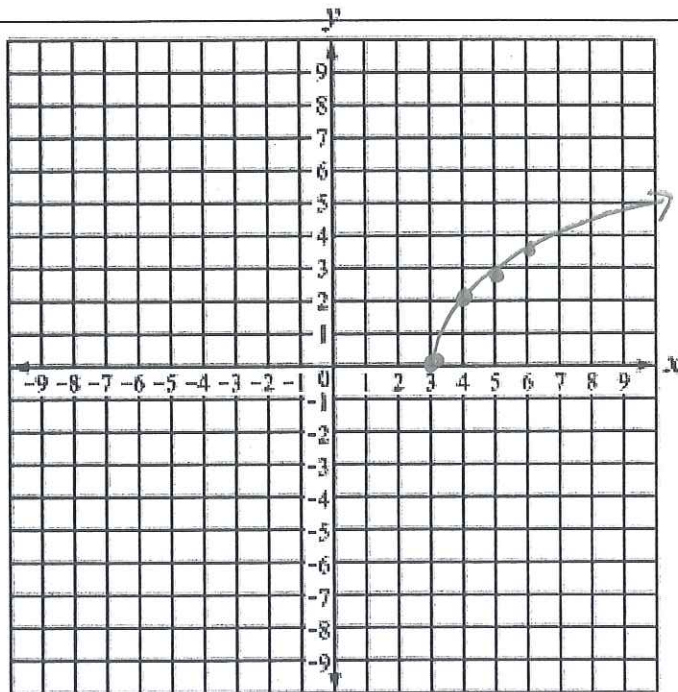
x	y
2	Er
3	0
4	2
5	2.8
6	3.4

Domain: $x \geq 3$

Range: $y \geq 0$

X-Intercept: $x = 3$

Y-Intercept: none



b) $y = \sqrt{x+4} - 2$

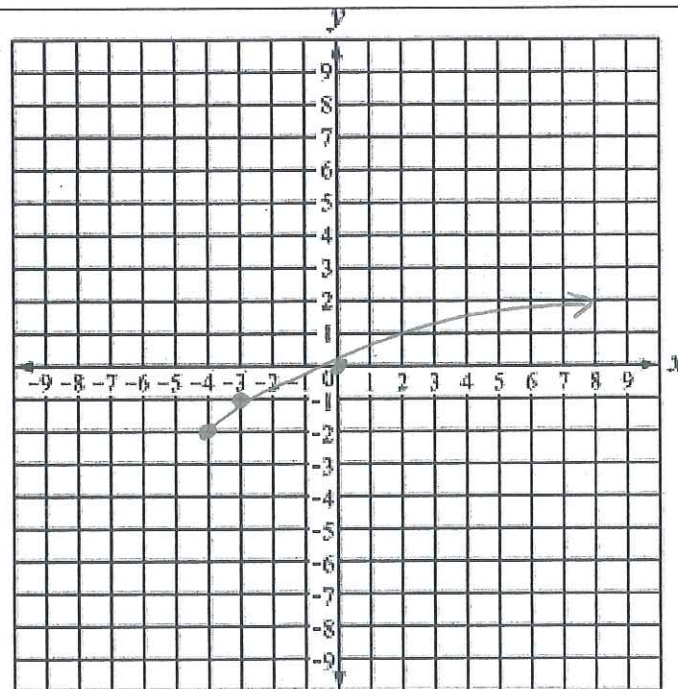
-5	Er
-4	-2
-3	-1
-2	-1.6
-1	-2.3
0	0
1	2.3

Domain: $x \geq -4$

Range: $y \geq -2$

X-Intercept: 0

Y-Intercept: 0

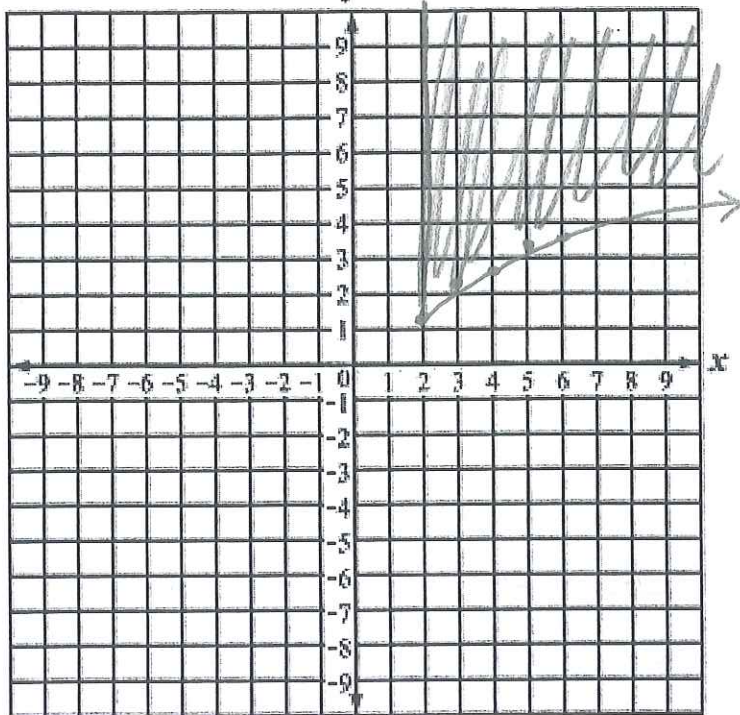


9) Graph each inequality. You must include a table of values as part of your work.

a) $y > \sqrt{3x - 4}$

x	y
1	εr
2	1.4
3	2.2
4	2.8
5	3.3
6	3.7

Dotted



b) $y \leq \sqrt{x} + 5$

x	y
-1	εr
0	5
1	6
2	6.4
3	6.7
4	7

