

Name: Key

Period: \_\_\_\_\_

Date: \_\_\_\_\_

## Math 3 Unit One Review

Show All Your Work!!!!

For problems 1-4, determine whether the equation defines  $y$  as a function of  $x$ . If it is a function, identify the domain.

1)  $y = 7x^2 + 3$

yes,  $\mathbb{R}$ 

2)  $y = \pm\sqrt{x^2 + 4}$

Not a function

3)  $2x^2 + y = 13$

yes,  $\mathbb{R}$ 

4)  $y = \frac{x+1}{\sqrt{4-x}}$

\* square root  
\* Division

yes,  $4-x > 0 \rightarrow 4 > x$

Use the functions  $j(x) = 3x^3 + x$  and  $h(x) = |4x - 1|$  for problems 5-8.

5)  $h(0)$

$= |4(0) - 1|$

$= |-1|$

$= 1$

7)  $-j(x)$

$= -(3x^3 + x)$

$= -3x^3 - x$

6)  $h(-t+3)$

$= |4(-t+3) - 1|$

$= |-4t + 12 - 1|$

$= |-4t + 11|$

8)  $j(4)$

$= 3(4)^3 + (4)$

$= 196$

For problems 9 & 10, find the average rate of change for  $f(x) = x^2 + 1$  for these intervals:

9) From -1 to 1

x	y
-1	2
1	2

$\leftarrow (-1)^2 + 1 = 2$   
 $\leftarrow (1)^2 + 1 = 2$

$$\frac{2-2}{1-(-1)} = \frac{0}{2} = 0$$

10) From 0 to 3

x	y
0	1
3	10

$\leftarrow (0)^2 + 1 = 1$   
 $\leftarrow (3)^2 + 1 = 10$

$$\frac{10-1}{3-0} = \frac{9}{3} = 3$$

$$\frac{y_2 - y_1}{x_2 - x_1}$$

Factor.

10)  $x^2 + 11x + 28$

$(x + 7)(x + 4)$

$+ \frac{4x}{11x} \checkmark$

11)  $2x^2 - 9x - 5$

$(2x + 1)(x - 5)$

$+ \frac{-10x}{-9x} \checkmark$

12)  $\frac{12x^2}{4} + \frac{28x}{4} + \frac{8}{4}$

GCF:

$4(3x^2 + 7x + 2)$

$4(3x + 1)(x + 2)$

$+ \frac{6x}{7x} \checkmark$

Solve the following equations.

13)  $8x - (2x + 1) = 3x - 10$

$8x - 2x - 1 = 3x - 10$

$6x - 1 = 3x - 10$

$3x = -9$

$x = -3$

14)  $3x - 7x + 17 = 2(x + 1)$

$-4x + 17 = 2x + 2$

$-6x = -15$

$x = 2.5$

15)  $\sqrt[3]{2x - 5} + 2 = -3$

$\sqrt[3]{2x - 5} = -5$

$2x - 5 = -125$

$x = -60$

16)  $\sqrt{2x - 1} - 3 = 0$

$+3 +3$

$(\sqrt{2x - 1})^2 = (3)^2$

$2x - 1 = 9$

$x = 5$

17)  $(\sqrt{x + 3})^2 = (x + 1)^2$

$(x + 1)(x + 1)$   
FOIL!

$x + 3 = x^2 + 2x + 1$

$0 = x^2 + x - 2$

$0 = (x + 2)(x - 1)$

$x = -2$  (extraneous)  
 $x = 1$

18)  $2(2x)^{\frac{1}{3}} + 1 = 5$

$-1 -1$

$\frac{2(2x)^{\frac{1}{3}}}{2} = \frac{4}{2}$

$(2x)^{\frac{1}{3}} = 2$

$2x = 8$

$x = 4$