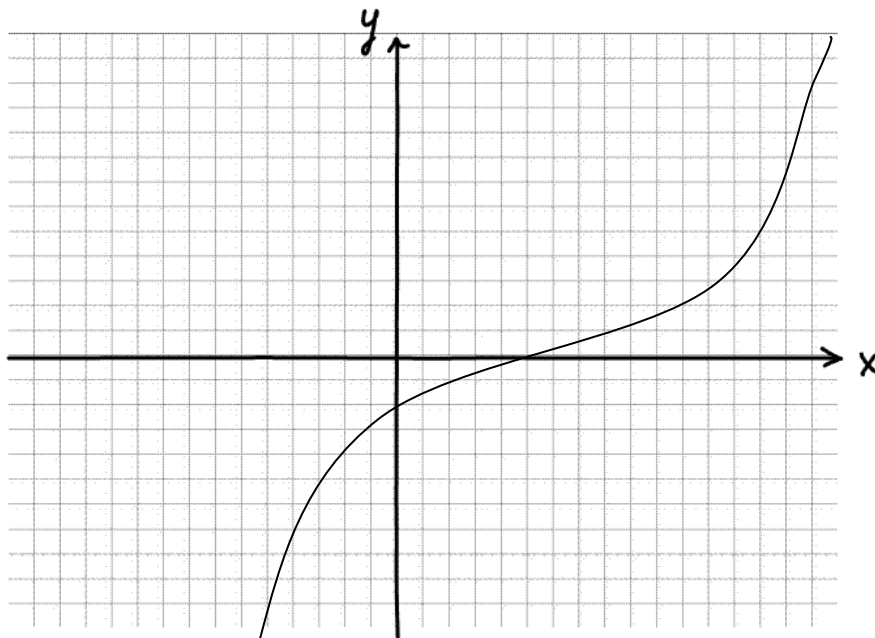




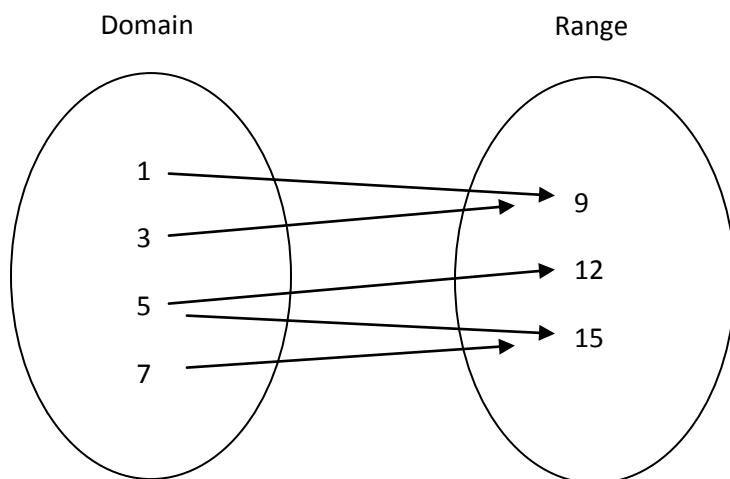
- \*20 questions
- \*Calculators allowed
- \*Show all work/steps- use separate paper
- \*Recommend time frame 30min -45min

Concept of Functions and Relations

1. True or False: All Relations are Functions?
2. Define the Domain of a function in your own words
3. Does the graph represent a function? (justify your answer)



4. What is the range of the following function?  $f(x) = x^2$
5. Use the mapping diagram to determine if the relation is a function



6. Is  $f(x) = 2x + 4$  a linear function? (explain)
7. What is the "Vertical Line Test?"

Function Operations

Perform the following function operations given  $f(x) = 2x + 1$  and  $g(x) = -\frac{1}{2}x - 3$

8.  $f(x) + g(x) =$
9.  $-3f(x) - g(x) =$
10.  $2f(x)g(x) =$
11.  $f(g(x)) =$
12.  $g(f(x)) =$

Inverse Functions

13. Are  $f(x) = 2x + 4$  and  $g(x) = -\frac{1}{2}x - 2$  inverses of each other? (explain)
14. Find the inverse function of  $f(x) = 4x - 5$
15. Find the inverse function of  $f(x) = \frac{1}{3}x + 2$  and verify your answer
16. Find the inverse function of  $f(x) = 5x - 9$  and verify your answer

Graphing Functions

17. Which variable effects the vertical movement of the function  $f(x) = mx + b$ ?
18. Graph the function  $f(x) = x^2 + 4$
19. Graph the function  $f(x) = -2(x - 3)^2 + 5$

Special Functions

20. Find the following values of  $f(x) = \begin{cases} 2x + 10 & \text{for } x \geq -3 \\ x^2 & \text{for } -10 \leq x < -3 \\ 3x^2 + 5x + 1 & \text{for } x < -10 \end{cases}$
- a.  $f(5)$
- b.  $f(-10)$
- c.  $f(-20)$