

1. A. Fill in the blanks. [Domain, Range, Relation, Function]

A _____ f from a set A to a set B is a _____ that assigns
to each element x in the set A exactly one element y in the set B .

B. Fill in the blanks. [Domain, Range, Relation, Function]

When discussing a function f , the first set is called the _____ and the
second set is called the _____.

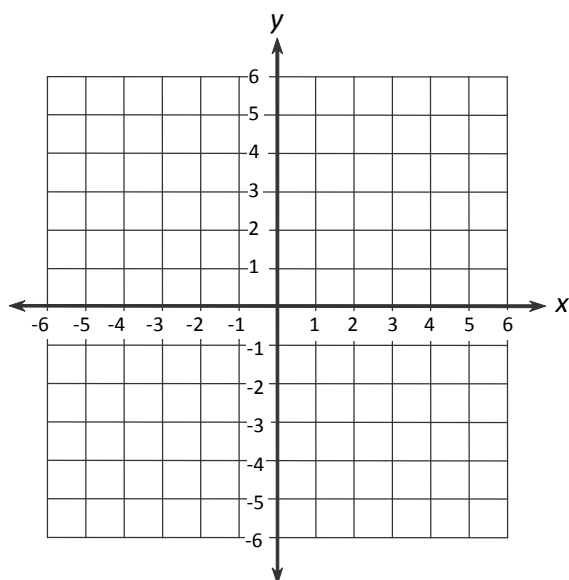
C. State the definition of a function.

2. State an example of a function...

A. in table form.

| x | y |
|-----|-----|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

B. in graph form.



3. Choose one common function from the list below and answer the questions that follow:

| ✓ | Algebraic Form | Name |
|---|----------------------------------|----------------------------------|
| | $f(x) = k$ | Constant Function (linear) |
| | $f(x) = x$ | Identity Function (linear) |
| | $f(x) = x^2$ | Square Function (parabola, U) |
| | $f(x) = x^3$ | Cubic Function |
| | $f(x) = \sqrt{x}$ | Square Root Function |
| | $f(x) = x $ | Absolute Value Function (V) |
| | $f(x) = \frac{1}{x}$ | Reciprocal Function (hyperbola) |
| | $f(x) = \llbracket x \rrbracket$ | Greatest Integer Function (step) |

State the following and provide **JUSTIFICATION** for each.

A. Domain in set-builder notation

B. Range, in words

C. Intervals where the function is

a. Increasing

b. Decreasing

c. Constant

D. Whether or not the function is symmetric with respect to the

a. x -axis. (Hint: replace y with $-y$.)

b. y -axis. (Hint: replace x with $-x$.)

c. origin. (Hint: replace y with $-y$ and x with $-x$.)

E. Whether or not the function is

a. Even (Hint: $f(-x) = f(x)$)

b. Odd (Hint: $f(-x) = -f(x)$)

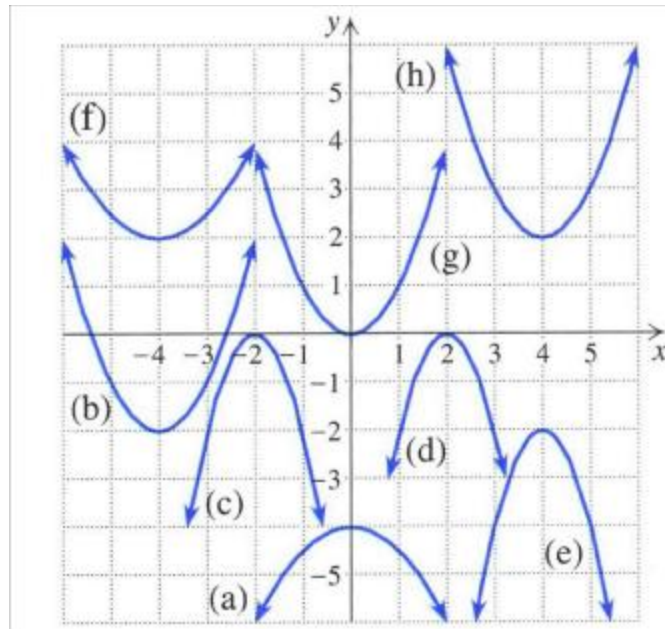
c. Neither

F. Whether the function has

a. x -intercepts

b. y -intercepts

4.



A. Match each function with its graph.

i. $y = x^2$ _____

ii. $y = (x - 4)^2 + 2$ _____

iii. $y = -2(x - 4)^2 - 2$ _____

iv. $y = \frac{1}{2}(x + 4)^2 + 2$ _____

v. $y = -2(x - 2)^2$ _____

B. Write the equation of the graph after the indicated transformation.

a. The graph of $y = |x|$ is translated three units right.

b. The graph of $y = x$ is translated 2 units to the left and 5 units up.

c. The graph of $y = x^2$ is translated 4 unit to the right, 2 units down and reflected about the x -axis.

5. If $f(x) = 2\sqrt{x} + 3$ and $g(x) = x^2 + 4$, find the following.

Simplify if possible and state the domain where requested.

A. $(f + g)(1)$

B. $(f - g)(x)$

Domain in set-builder notation: _____

C. $(f \cdot g)(0)$

D. $\left(\frac{f}{g}\right)(0)$

E. $(f \circ g)(1)$

6. True or False.

Write **TRUE** or **FALSE**.

- A. -2 is an element of the set of **Whole Numbers**. _____
- B. The **domain** of $y = |x|$ is $(-\infty, \infty)$. _____
- C. The **range** of $y = |x|$ is $[0, \infty)$. _____
- D. If $f(x) = |x| + 3$, then $f(-x) = f(x)$. _____
- E. If $f(x) = |x| + 3$, then $f(-x) = -f(x)$. _____
- F. If $x = \frac{1}{2}t$ and $F = x^2$, then F is a function of t . _____
- G. Another way to write “all real numbers” is $(-\infty, \infty)$. _____

7. A. Describe the following sets of numbers:

- a. Natural Numbers:
- b. Whole Numbers:
- c. Integers:
- d. Rational Numbers:
- e. Irrational Numbers:

B. Name all the subsets of the real numbers for which 5 belongs.

C. Name all subsets of the real numbers for which $\frac{4}{5}$ belongs.

8. Match the example to the correct field property

i. $a + 0 = a$

ii. $a(b + c) = ab + ac$

iii. $(a + b) + c = (b + a) + c$

iv. $a + (-a) = 0$

v. $(a + b) + c = a + (b + c)$

A. Distributive Property _____

B. Associative Property of Addition _____

C. Commutative Property of Addition _____

D. Identity Property of Addition _____

E. Inverse Property of Addition _____

9. A. Write the slope-intercept form of the line $4x - 2y = 3$.
- B. Write the slope-intercept form of the equation of the line that is **parallel** to $4x - 2y = 3$ and passes through the point $(2, 1)$.
- C. Write the slope-intercept form of the equation of the line that is **perpendicular** to $4x - 2y = 3$ and passes through the point $(2, 1)$.
- D. Are the points $(-5, 0)$, $(0, 5)$, $(5, 0)$ and $(0, -5)$ vertices of a parallelogram?

10. A. Find the slope of the line through the points $(5, -1)$ and $(-5, 5)$.

B. Write the slope-intercept form of the equation of the line passing through the points in part **A** above.

C. Which of the common functions models the flight of a ball thrown through the air? Explain and draw a sketch.