

Chapter: 1

Topic 1: Domain and Range

1. State the domain and range of the following ordered pairs: (2, 3) (4, -1) (-1, 0) (8, 1.44)
2. State the domain for the equation $y = \frac{3}{x-2}$
3. State the domain for the equation $y = \sqrt{x+3}$

Topic 2: Functions

4. $f(x) = 4x - 8$, find $f(-2)$
5. $g(x) = x^2$ and $f(x) = \frac{x}{(x+1)^3}$ find the equation for $[f \circ g](x)$
6. Use the equations in question 5 to find $g(f(-2))$

Topic 3: Coordinates and equations

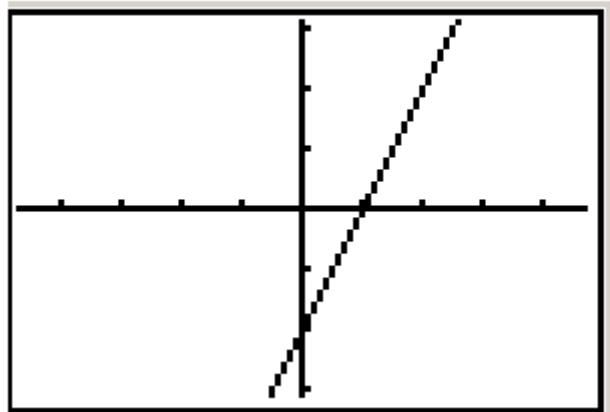
7. Graph the following lines

$y = 2x - 4$

$y = -1/2 x + 3$

$f(x) = -x$

8. state the equation of the graph to the right in $y=mx+b$ form and point slope form using the ordered pair when $x = 2$.



9. state the x and y intercepts of the graph to the right

10. State the equation ($y=mx+b$ form) of the line that passes through $(2, 3)$ and is parallel to the line with an equation of $y = 4x - 2$.

11. State the equation (point slope form) of the line that passes through $(-1, -2)$ and is perpendicular to the line with an equation of $y = \frac{1}{2}x - 2$.

Topic 4: ACT/SAT Problems

12. The different rational numbers are chosen at random. Which of the following is always true?

- I. The product of the two numbers is a positive number.
- II. The product of the square roots of the two numbers is an irrational number.
- III. The square of the sum of the two numbers is a rational number.

A. I only B. II only C. III only D. I and II E. II and III

13. If each of the first 10 prime numbers is squared, how many even numbers would be in the new set?

A. 0 B. 1 C. 8 D. 9 E. 10

Topic 1: Domain and Range

- 1. State the domain and range of the following ordered pairs: (2, 3) (4, -1) (-1, 0) (8, 1.44)
D: $\{-1, 2, 4, 8\}$ R: $\{-1, 0, 1.44, 3\}$
- 2. State the domain for the equation $y = \frac{3}{x-2}$ $\{x | x \neq 2\}$
- 3. State the domain for the equation $y = \sqrt{x+3}$ $\{x | x \geq -3\}$

Topic 2: Functions

- 4. $f(x) = 4x - 8$, find $f(-2)$ $4(-2) - 8 = -16$
- 5. $g(x) = x^2$ and $f(x) = \frac{x}{(x+1)^3}$ find the equation for $[f \circ g](x)$ $\frac{x^2}{(x^2+1)^3}$
- 6. Use the equation in question 5 to find $g(f(-2))$
 $\frac{-2}{(-2+1)^3} = \frac{-2}{(-1)^3} = 2$; $g(2) = 2^2 = 4$

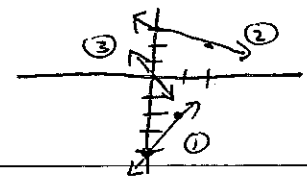
Topic 3: Coordinates and equations

7. Graph the following lines

① $y = 2x - 4$

② $y = -1/2 x + 3$

③ $f(x) = -x$



8. state the equation of the graph to the right in $y=mx+b$ form and point slope form using the ordered pair when $x = 2$.

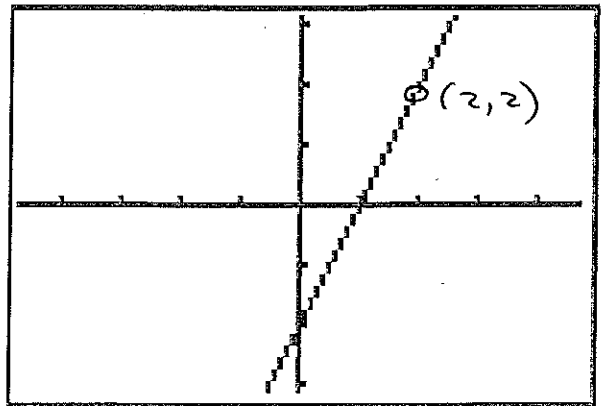
$y = 2x - 2$

$y - 2 = 2(x - 2)$

9. state the x and y intercepts of the graph to the right

x: 1

y: -2



10. State the equation ($y=mx+b$ form) of the line that passes through (2, 3) and is parallel to the line with an equation of $y = 4x - 2$.

$y = 4x + b$
 $3 = 4(2) + b$
 $-8 \quad -8 \quad -5 = b$

$y = 4x - 5$

11. State the equation (point slope form) of the line that passes through (-1, -2) and is perpendicular to the line with an equation of $y = 1/2 x - 2$.

$y = -2x + b$
 $-2 = -2(-1) + b$
 $-2 = 2 + b$
 $-2 \quad -2$
 $-4 = b$

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

$y = -2x - 4$

ACT/SAT Problems

12.

Two different rational numbers are chosen at random. Which of the following is always true?

- I. The product of the two numbers is a positive number.
- II. The product of the square roots of the two numbers is an irrational number.
- III. The square of the sum of the two numbers is a rational number.



- I only
- II only
- III only
- I and II
- II and III

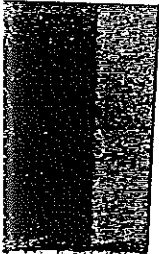
I $4 \cdot -2 = -8$ No

II $\sqrt{4} \sqrt{9} = 2 \cdot 3 = 6$ No

III $(4+5)^2 = 9^2 = 81$ Yes

13.

If each of the first 10 prime numbers is squared, how many even numbers would be in the new set?



- 0
- 1
- 8
- 9
- 10

$2^2 = 4$
 $3^2 = 9$
 $5^2 = 25$
 $7^2 = 49$

↑
 evens are divisible by 2
 primes are only divisible by 1 & itself. Therefore only 2 will create an even square

Notebook Check:

Homework Check:

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