

The following 16 multiple-choice questions are worth 4 points each.

1. Solve:  $\frac{x+2}{4} = \frac{3}{8} + \frac{x-5}{6}$

a.  $x = -1$

c.  $x = \frac{-23}{2}$

b.  $x = \frac{35}{2}$

d.  $x = 4$

e.  $x = \frac{29}{2}$

2. Solve  $F = \frac{B}{S-V}$  for S.

a.  $S = \frac{F}{B} + V$

c.  $S = \frac{B}{F} + V$

b.  $S = \frac{B}{F-V}$

d.  $S = F - \frac{B}{F}$

e.  $S = \frac{V}{F} + B$

3. Determine which of the following is true.

- I. A linear function with positive slope has a graph that rises from left to right.
- II. Every line in the rectangular coordinate system has an equation that can be expressed in slope-intercept form.
- III. The graph of the linear function  $5x + 6y = 30$  is a line passing through the point  $(0, 5)$  with slope equal to  $\frac{-5}{6}$ .
- IV. The graph of  $x = 7$  in the rectangular coordinate system is the single point  $(7,0)$ .

- a. I & III are true
- b. II & III are true
- c. Only III is true
- d. II & IV are true
- e. None are true.

4. Let  $a$ ,  $b$ , &  $c$  be three integers such that  $a < 0$ ,  $b < 0$  and  $c > 0$ .

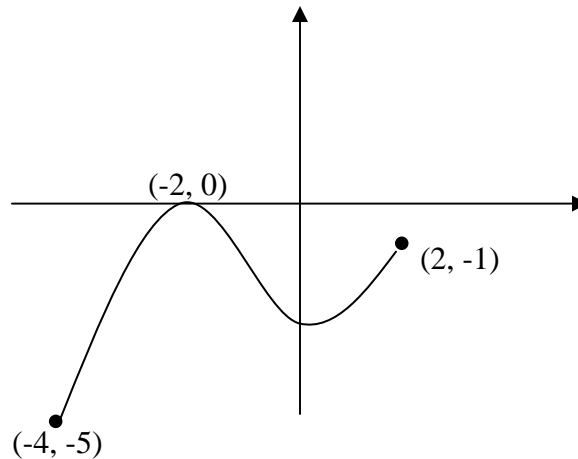
Solve the following inequality for  $x$ :

$$\frac{a}{b}x > c$$

- a.  $\left(\frac{cb}{a}, \infty\right)$
- b.  $\left(\frac{ca}{b}, \infty\right)$
- c.  $\left(-\infty, \frac{ca}{b}\right)$
- d.  $\left(-\infty, \frac{cb}{a}\right)$
- e.  $(cb, \infty)$



7. The graph of a function is shown below. Determine the domain and range.



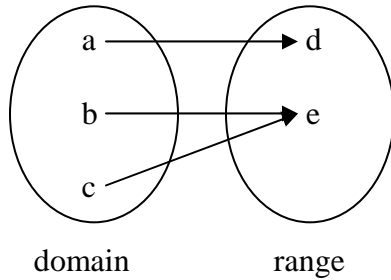
- a. Domain:  $[-4, 2]$   
Range:  $[-5, -1]$
- b. Domain:  $[-4, -2]$   
Range:  $[-5, 0]$
- c. Domain:  $[-4, -2]$   
Range:  $[-5, -1]$
- d. Domain:  $[-4, -5]$   
Range:  $[2, -1]$
- e. Domain:  $[-4, 2]$   
Range:  $[-5, 0]$
8. Determine  $f(0) + f(6)$  if

$$f(x) = \begin{cases} \frac{x^2 - 4}{x - 2} & \text{if } x \neq 2 \\ 6 & \text{if } x = 2 \end{cases}$$

- a. 10
- b. 12
- c. 18
- d. 6
- e. None of the preceding

**9. Which of the following is/are functions?**

I.



II.  $x^2 + y = 1$

III.

<b>x</b>	-3	-2	-2	-1	0	1
<b>y</b>	5	4	3	2	1	0

a. Only I

c. I and II

b. Only II

d. II and III

e. All are functions

**10. Given  $f(x) = -2x^2 + x - 1$ , evaluate the difference quotient**

$$\frac{f(x+h) - f(x)}{h}$$

a. 1

c.  $-4x - 2h + 1$

b.  $-4x - 2h$

d.  $-2x - 2h + 1$

e.  $-4x - 2h - 1$

**11. Find the equation of the line that passes through the points  $(-5, 5)$  and  $(2, -7)$ .**

**a.**  $y = \frac{-2}{7}x - \frac{45}{7}$

**b.**  $y = \frac{-12}{7}x - \frac{25}{7}$

**c.**  $y = 4x - 15$

**d.**  $y = \frac{2}{7}x + \frac{25}{7}$

**12. Rewrite the following equation in slope – intercept form:**

$$3x + 6y + 24 = 0$$

**a.**  $y = \frac{1}{2}x + 4$

**b.**  $y = 2x - 4$

**c.**  $y = \frac{-1}{2}x - 4$

**d.**  $y = \frac{-1}{2}x + 4$

**e.**  $y = \frac{1}{2}x - 4$

13. Find the equation of the line that passes through (5,2) and is perpendicular to the line whose equation is  $4y - x = 24$ .

a.  $y = -\frac{1}{4}x - \frac{11}{2}$

b.  $y = -4x + 22$

c.  $y = -4x - 22$

d.  $y = 4x - 22$

14. Find the slope,  $x$  – intercept and  $y$  – intercept of the following:

$$3x - 2y = 4.$$

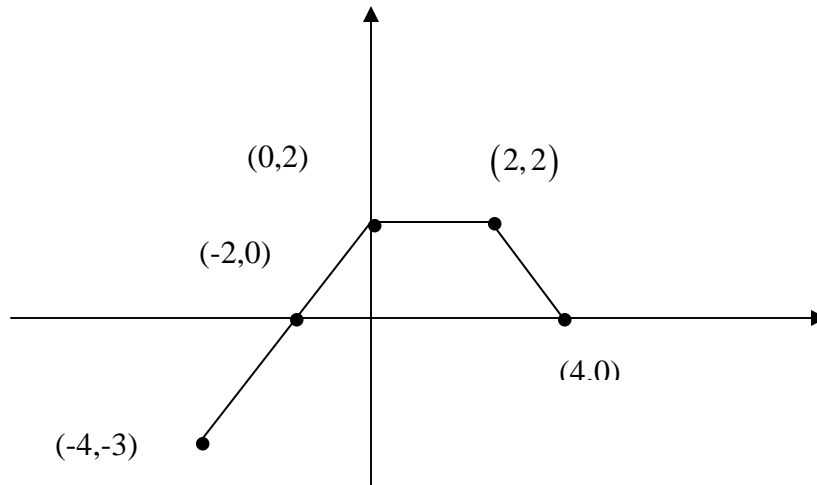
a. slope =  $-2$ ,  $x$  – int =  $3$ ,  $y$  – int =  $4$

b. slope =  $\frac{3}{2}$ ,  $x$  – int =  $\frac{4}{3}$ ,  $y$  – int =  $-2$

c. slope =  $\frac{3}{2}$ ,  $x$  – int =  $\frac{3}{4}$ ,  $y$  – int =  $2$

d. slope =  $-\frac{3}{2}$ ,  $x$  – int =  $\frac{4}{3}$ ,  $y$  – int =  $-2$

15. Given the graph of  $y = f(x)$  below. Under the transformation  $y = 2f(x+1)$ , the point  $(-4, -3)$  will be translated to what point?



- a.  $(-3, -6)$                       c.  $(-8, -6)$
- b.  $(-4, -6)$                       d.  $(-5, -6)$
- e.  $(-5, -3)$
16. Determine the equation that results from the following transformations:
- I. The square root function is shifted 3 units to the right.  
II. It is stretched/shrunk vertically by a factor of 2  
III. Reflected across the x-axis.  
IV. Translated 4 units up.
- a.  $y = -2\sqrt{x+3} + 4$                       c.  $y = 2\sqrt{x+3} + 4$
- b.  $y = -2\sqrt{x-3} + 4$                       d.  $y = 2\sqrt{x-3} + 4$
- e.  $y = -2\sqrt{x+3} - 4$

Name \_\_\_\_\_ Instructor \_\_\_\_\_

Section \_\_\_\_\_

Questions 17-19 are free response. Pages 9 and 10 should be turned in with your answer sheet.

1. Solve the following inequality and express your answer in interval notation. [8 points]

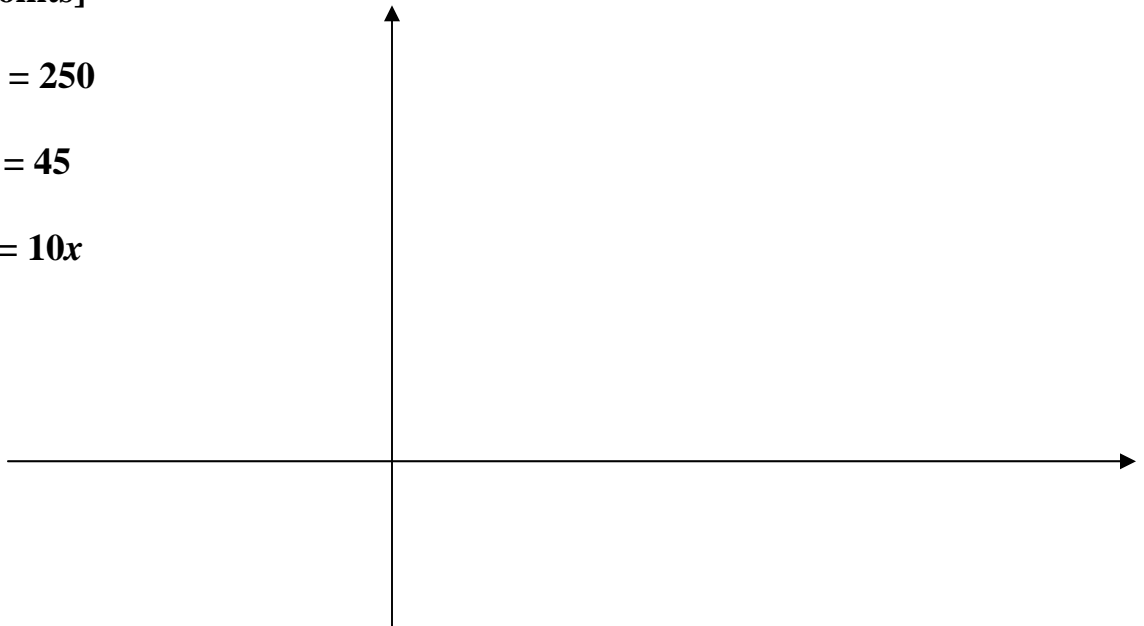
$$5 + 4\left(x + \frac{1}{4}\right) - 4x \geq \frac{1}{4}x + 2$$

18. Sketch by hand on the axes below:  
[8 points]

a.  $y = 250$

b.  $x = 45$

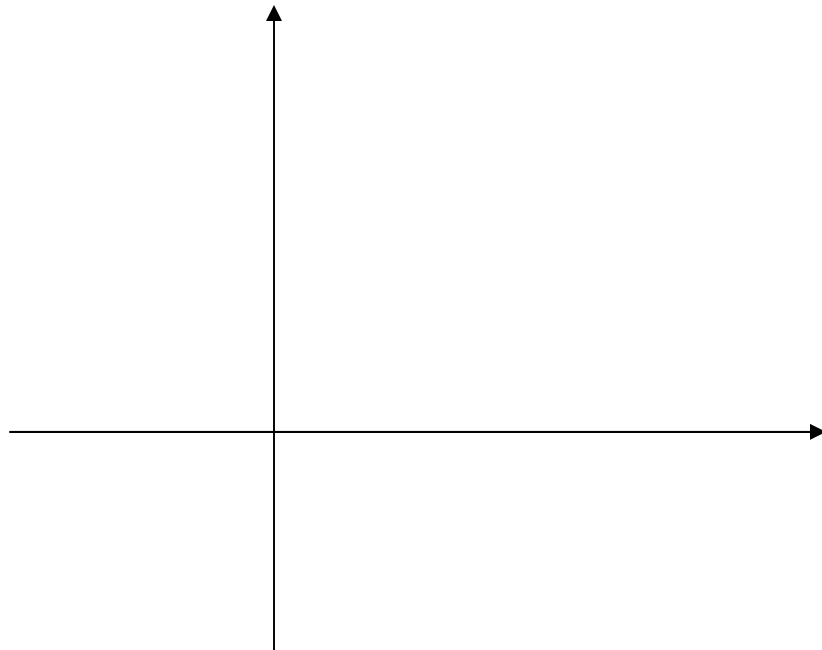
c.  $y = 10x$



19. On a particular winter day, the temperature rose steadily from  $20^\circ$  Fahrenheit at 6:00 am to a high of  $36^\circ$  Fahrenheit at 2:00 pm. Then the temperature dropped steadily to  $28^\circ$  Fahrenheit by 6:00 pm. We can say that the temperature,  $F$ , in Fahrenheit degrees is a function of the time,  $t$ , in hours since 6:00 am. Use this information to fill in the blanks below. [20 points total; 4 points for the graph]

- a.  $F(0) =$  \_\_\_\_\_
- b.  $F(8) =$  \_\_\_\_\_
- c.  $F(12) =$  \_\_\_\_\_
- d. The domain of the function is \_\_\_\_\_.
- e. The range of the function is \_\_\_\_\_.
- f. The independent variable is \_\_\_\_\_.
- g. The dependent variable is \_\_\_\_\_.
- h. The function increases on what interval(s)? \_\_\_\_\_.
- i. The function decreases on what interval(s)? \_\_\_\_\_.

- j. Sketch the graph that represents this relationship.



## Multiple Choice Key

1	C
2	C
3	A
4	A
5	D
6	B
7	E
8	A
9	C
10	C
11	B
12	C
13	B
14	B
15	D
16	B