

Advanced Algebra  
Semester I Exam Review #3

Name Key

B 1. Which of the following relations is a function?

$A = \{(2,3) (3,5) (2, 7)\}$        $B = \{(5, -1)(3, 1) (1, 3)\}$

- a. A
- b. B
- c. Both A & B are functions
- d. Neither A & B are functions

C 2. The graph of  $y = |x + 4| + 3$

- a. translates 4 units to the right and 3 units up from the parent graph
- b. translates 3 units to the left and 4 units up from the parent graph
- c. translates 4 units to the left and 3 units up from the parent graph
- d. translates 3 units to the right and 4 units up from the parent graph

C 3. For which set of points does the graph of the line containing them have a slope of zero?

Same point  $\leftarrow \frac{-3 - -3}{4 - 4} = \frac{0}{0}$

- a.  $(4,3)$  and  $(4,-3)$        $\frac{3 - -3}{4 - 4} = \frac{6}{0}$
- b.  $(4,-3)$  and  $(4, -3)$
- c.  $(4, 3)$  and  $(-4, 3)$        $\frac{3 - 3}{4 - -4} = \frac{0}{8}$
- d.  $(-4,3)$  and  $(3,4)$        $\frac{3 - 4}{-4 - 3} = \frac{-1}{-7}$

D 4. Evaluate  $f(x) = x^2 - 2x + 3$  if  $x = -1$

- a. 4
  - b. 0
  - c. 3
  - d. 6
- $(-1)^2 - 2(-1) + 3$   
 $1 + 2 + 3$   
 $6$

A/D 5. Determine the vertex of  $y = |x - 2| - 1$

- a.  $(2, -1)$
- b.  $(-2, -1)$
- c.  $(2, 1)$
- d.  $(2, -1)$

Solve.

6. Write an equation of a line in slope-intercept that contains (4, -2) and (6, 6).

$$\frac{-2-6}{4-6} = \frac{-8}{-2} = 4$$

$$y - 2 = 4(x - 4)$$

$$y + 2 = 4x - 16$$

$$y = 4x - 18$$

7. Write an equation of a line in slope-intercept form that is perpendicular to  $y = \frac{1}{2}x + 4$  and has the same y-intercept as  $2x - 5y = -15$ .

$$-5y = -2x - 15$$

$$y = \frac{2}{5}x + 3$$

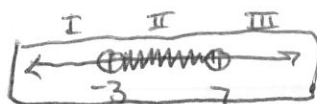
$$y = -2x + 3$$

8a.  $|x-2| < 5$

$$x-2=5 \quad x-2=-5$$

$$x=7 \quad x=-3$$

Critical points



$$-3 < x < 7$$

I  $| -4-2 | < 5$

$$|-6| < 5$$

$$6 < 5 \quad F$$

II  $| 0-2 | < 5$

$$|-2| < 5$$

$$2 < 5 \quad T$$

III  $| 8-2 | < 5$

$$|6| < 5$$

$$6 < 5 \quad F$$

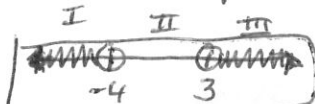
8b.  $|2x+1| > 7$

$$2x+1=7 \quad 2x+1=-7$$

$$2x=6 \quad 2x=-8$$

$$x=3 \quad x=-4$$

Critical points



$$x < -4 \text{ or } x > 3$$

I  $| 2 \cdot -5 + 1 | > 7$

$$|-9| > 7 \quad T$$

$$9 > 7$$

II  $| 2 \cdot 0 + 1 | > 7$

$$|1| > 7 \quad F$$

$$1 > 7$$

III  $| 2 \cdot 4 + 1 | > 7$

$$|9| > 7 \quad T$$

$$9 > 7$$

9. a.  $\frac{5}{2}x - y = 5 \rightarrow 5x - 2y = 10 \cdot 2$

$$4y = 3x - 6 \rightarrow -3x + 4y = -6$$

$$10x - 4y = 20$$

$$-3x + 4y = -6$$

$$7x = 14$$

$$x = 2$$

$$4y = 3(2) - 6$$

$$4y = 6 - 6$$

$$4y = 0$$

$$y = 0$$

$$(2, 0)$$

b.  $5.5x + 7.5y = 930$   $55x + 75y = 9300$

$$0.12x + 0.15y = 19.2$$
  $12x + 15y = 1920 \cdot 5$

$$55x + 75y = 9300$$

$$-60x - 75y = -9600$$

$$-5x = -300$$

$$x = 60$$

$$(60, 80)$$

$$5.5(60) + 7.5y = 930$$

$$330 + 7.5y = 930$$

$$7.5y = 600$$

$$y = 80$$

\*distribute negative

10.  $\frac{y-2}{3} - \frac{3(2y+1)}{4} = \frac{5}{6} \cdot 2$

$$72 \left( \frac{4y-8}{12} - \frac{6y+3}{12} \right) = \frac{10}{12} \cdot 72$$

$$4y - 8 - (6y + 3) = 10$$

$$4y - 8 - 6y - 3 = 10$$

$$-2y - 11 = 10$$

$$-2y = 21$$

$$y = -10.5$$