

Name: _____

College Algebra Exam Review #1

This review has questions over material that has been previously covered. Do this review as if it were a real exam and then check your answers. On problems you have the most difficulty on, go to the corresponding section in the textbook and redo any assigned homework problems.

1. Consider the following sets.

$$A = \{x \mid x \in N, x < 5\} \quad B = \{t \mid t \text{ is a factor of } 12\}$$

$$C = \{n \mid n \in W, 5 < n \leq 10\} \quad D = \{k \mid k \in Z, -3 < k < 3\}$$

- List all the elements in the set A.
- List all the elements in the set C.
- Is the element 4 in the set $A \cap B$?
- Is the element 0 in the set $B \cup C$?

2. Evaluate each expression.

a. $(4 + 5) \div 3^2 + (2^2 - 1)$

b. $3 + 4 - \frac{8}{4} + (-2^2 + 4(5 - 6))$

c. $\frac{(-3)(4)(-2)}{(-1)(4) - 8}$

d. $|7 - 9| - |9| - |-7|$

3. Perform the indicated operations and simplify completely.

a. $6(x - 4) + 3x - 12 - [10 - 4x]$

b. $(9 - x^2) + x^2 - 6x + 7[x - 3]$

c. $(-6ab^2)(-3a^2b)(-2b)$

d. $5x - \{3x + 2[x - 3(5 - x)]\}$

4. Write each phrase as an algebraic expression in terms of one variable.

a. Three more than five times a number

b. Eight less than seven times a number

c. Four more than seven times a number is seven less than four times a number

d. The product of three consecutive odd integers is 100

5. A cell phone company charges thirty dollars per month for a particular phone plan. Each minute used on the cell phone plan is fifty cents.

a. Write a mathematical model that relates the cost of the cell phone bill for the current month in terms of the number of minutes used. Clearly label what each variable represents.

b. Compute the number of minutes used if this month's cell phone bill was seventy dollars.

6. Mary has quarters, dimes, and nickels. She has 12 coins total and the value together is \$1.55. If the number of nickels she has is one more than the number of quarters she has, find the number of each coin she has.

7. Solve each equation for the indicated variable.

a. $7x - (3x + 12) = x + 6$

b. $2 - \frac{5t}{3} = -13$

c. $3x - 2y = 10$ for y

d. $6(x - 1) + 2 = 1 - 3(y - 2)$ for x

8. Solve each inequality and sketch the solution on a number line.

a. $2x - 1 < 5$

b. $6x - 1 \geq x + 4$

c. $-5 < 1 - 2x \leq 7$

d. $10 \leq 4 + 3x < 16$

9. Solve each absolute value equation or inequality.

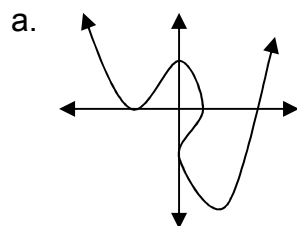
a. $|x - 3| \leq 6$

b. $|1 + 2x| \geq 6$

c. $|3x| - 5 \leq 11$

d. $|1 + 2x| = |2 + x|$

10. Determine if each of the following are functions.



b.

Domain	Range
-1	2
0	3
1	4
2	

c. $\{(1,2), (3,2), (2, 2), (1, 4)\}$

d. $y - x^2 = 1$

11. Find the domain of each function.

a. $y = x^2 + 6x - 7$

b. $y = \sqrt{2x - 1}$

c. $y = \frac{x}{3 - x}$

d. $y = \frac{-4}{\sqrt{6 - x}}$

12. Let $f(x) = 3x - 1$, $g(x) = \frac{6}{\sqrt{x}}$, and $h(x) = x^2 - 1$. Find the following.

a. $f(2)$

b. $g(9)$

c. $h(-3)$

d. $f(3) + h(2)$

e. $g(4) - f(6 + 2)$

f. $f(x - 2) - f(x)$

13. Daisy is having a cookie sale. She initially has 50 cookies to sell. Some are chocolate chip cookies and some are peanut butter cookies. She sells each chocolate chip cookie at 50 cents and the peanut butter cookies at 35 cents each. Suppose Daisy sold x chocolate chip cookies. Express the amount of money she made, M , as a function of x , the amount of cookies sold.

14. Compute the slope through each pair of points.

a. (2, 3) and (-1,6)

b. (4,8) and (8,8)

c. (-2,2) and (-2,1)

d. (3, -1) and (6,-7)

15. Find the equation of the line in slope-intercept form for each condition given. Also, give the x-intercept and y-intercept in coordinate form.

a. Line passes through (2, 2) and (6, -8)

b. Line passes through (-1, -3) and is parallel to the line $3x - y = 9$

c. Line passes through (3, 3) and is perpendicular to the line $6x + 4y = 12$

d. Line passes through (3, -1) and has a zero slope

e. Line passes through (2, 4) and has an undefined slope

16. Determine if each pair of lines are parallel or perpendicular to each other. Otherwise, write neither.

a. Line 1: $3x + 6y = 0$

Line 2: $y = 2x - 1$

b. Line 1: $y - 6 = \frac{2}{3}(x + 4)$

Line 2: $9x + 6y = 12$

c. Line 1: Passes through (3, 1) & (5, 2)

Line 2: Passes through (7,7) & (-8,9)

d. Line 1: $3x + y = 10$

Line 2: $-2y = 6x - 4$

17. Solve each system.

a.
$$\begin{cases} 3x - y = 7 \\ x + 4y = -2 \end{cases}$$

b.
$$\begin{cases} 9x - 3y = 6 \\ 6x - 2y = 4 \end{cases}$$

c.
$$\begin{cases} \frac{x}{2} - y = 14 \\ x + \frac{y}{4} = 10 \end{cases}$$

d.
$$\begin{cases} 4x - 20 = 6y \\ 2x - 20 = 3y \end{cases}$$