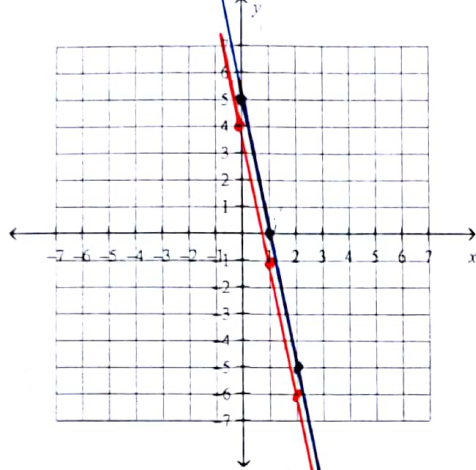


Algebra 1 - Semester 2 Exam Review

Chapter 6 - Systems of Equations

- 1 Graph the system of equations and tell whether there is *no solution*, *one solution*, or *infinitely many solutions*.

$y = -5x + 4$
 $y = -5x + 5$



No Solution

- 2 Tell whether the ordered pair (5, -2) is a solution of the system

$\begin{cases} 3x - 2y = 19 \\ -3x - y = -14 \end{cases}$

$3(5) + 2(-2) = 19$
 $15 + 4 = 19$
 $19 = 19$ ✓
 $-3(5) + (-2) = -14$
 $-15 - 2 = -17$
 $-17 \neq -14$

Not a solution

- 3 Solve $\begin{cases} 3x + y = 5 \\ y = x - 3 \end{cases}$ by using substitution. Express your answer as an ordered pair.

$3x + x - 3 = 5$
 $4x - 3 = 5$
 $+3 \quad +3$
 $4x = 8$
 $\frac{4x}{4} = \frac{8}{4}$
 $x = 2$
 $y = 2 - 3$
 $y = -1$

2, -1

- 4 Solve $\begin{cases} 4x - 4y = -24 \\ -x + 4y = 21 \end{cases}$ by using elimination. Express your answer as an ordered pair.

$3x = -3$
 $x = -1$
 $-(-1) + 4y = 21$
 $1 + 4y = 21$
 $-1 \quad -1$
 $4y = 20$
 $y = 5$

-1, 5

- 5 Solve $\begin{cases} x - 4y = -13 \\ 17x + 4y = 15 \end{cases}$ by using elimination. Express your answer as an ordered pair.

$8x = -8$
 $x = -1$
 $-1 - 4y = -13$
 $+1 \quad +1$
 $-4y = -12$
 $\frac{-4y}{-4} = \frac{-12}{-4}$
 $y = 3$

-1, 3

- 6 Solve the system of equations using the method of your choice.

$-3x + y = 7$
 $-y = 3x + 7$
 $-y = 4x + 3$
 $x = 4$
 $y = 3(4) + 7$
 $y = 12 + 7$
 $y = 19$

4, 19

- 7 Solve the system of equations using the method of your choice.

$2(5x - 3y = -16)$
 $3(4x + 2y = -4)$
 $10x - 6y = -32$
 $+ 12x + 6y = -12$
 $22x = -44$
 $x = -2$

-2, 2

$4(-2) + 2y = -4$
 $-8 + 2y = -4$
 $+8 \quad +8$
 $2y = 4$
 $y = 2$

Chapter 7 - Exponents

- 8 The Fun Guys game rental store charges an annual fee of \$10 plus \$6.50 per game rented. The Game Bank charges an annual fee of \$34 plus \$4.50 per game. For how many game rentals will the cost be the same at both stores? What is that cost?

$$\begin{array}{r} \$10 + \$6.50x = \$34 + \$4.50x \\ -4.50x \quad -4.50x \\ \hline 10 + 2x = 34 \\ -10 \quad -10 \\ \hline 2x = 24 \\ x = 12 \text{ games} \end{array}$$

- 9 Janice's Jelly Donut Store has \$2500 in expenses each month plus it costs \$2 per dozen donuts to make them. She sells donuts for 7 per dozen. How many dozen must she sell each month to break even?

$$\begin{array}{r} \$2500 + 2x = 7x \\ -2x \quad -2x \\ \hline 2500 = 5x \\ \frac{2500}{5} = \frac{5x}{5} \\ 500 = x \end{array}$$

- 10 The sum of two numbers is 74. Their difference is 14. Write a system of equations that describes this situation. Solve by elimination to find the two numbers.

$$\begin{array}{r} x + y = 74 \\ + x - y = 14 \\ \hline 2x = 88 \\ x = 44 \end{array} \quad \begin{array}{r} 44 + y = 74 \\ -44 \quad -44 \\ \hline y = 30 \end{array}$$

44 and 30

- 11 Sharon has some one-dollar bills and some five-dollar bills. She has 14 bills. The value of the bills is \$30. Solve a system of equations using elimination to find how many of each kind of bill she has.

$$\begin{array}{r} x = \$1 \text{ bills} \\ y = \$5 \text{ bills} \\ -x + y = 14 \\ + 1x + 5y = 30 \\ \hline 4y = 16 \\ y = 4 \text{ bills} \end{array} \quad \begin{array}{r} x + 4 = 14 \\ x = 10 \\ \$1 \text{ bills} \end{array}$$

- 12 Simplify 2^{-3} .

$$\frac{1}{2^3} \text{ or } \frac{1}{8}$$

- 13 Evaluate $a^{-2}b^0$ for $a = -3$ and $b = 3$.

$$\frac{1}{(-3)^2} \text{ or } \frac{1}{3^2} \text{ or } \frac{1}{9}$$

- 14 Simplify $\frac{9x^0y^{-8}}{z^{-8}}$.

$$\frac{9z^8}{y^8}$$

- 15 Simplify $m^3 \cdot y^6 \cdot m^2$.

$$m^5y^6$$

- 16 Simplify $(x^5)^{-8}x^4$.

$$\frac{x^4}{x^{40}} = \frac{1}{x^{36}}$$

- 17 Simplify $(m^2n^{-3})^2(-m^{-3}n^3)^3$.

$$m^4n^{-6} - m^{-9}n^9 \\ - m^{-5}n^3 \quad - \frac{n^3}{m^5}$$

- 18 Simplify $\frac{y^6z^{12}}{(yz)^3}$.

$$y^3z^9$$

- 19 Simplify $\left(\frac{2m^8}{m^2n^4}\right)^4$.

$$\left(\frac{2m^6}{n^4}\right)^4 \quad \frac{16m^{24}}{n^{16}}$$

- 20 Simplify $(x^9)^0(x^7)^2$.

$$x^{14}$$

- 21 Simplify $(-5g^5h^6)^2(g^4h^2)^4$.

$$25g^{26}h^{20}$$

22 Which function is greater at the given value?

$y = 2^x$ or $y = x^2$ at $x = 9$

2^9 or 9^2

512 > 81

23 Suppose the population of a town is 2,700 and is growing 4% each year.

a. Write an equation to model the population growth.

$y = 2,700(1.04)^t$

b. Predict the population after 12 years.

$y = 2,700(1.04)^{12}$

$y = 4,322.79$

4,322 people

24 Find the balance in the account.

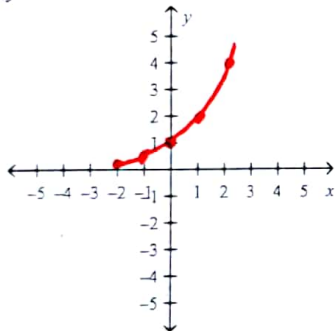
\$2,400 principal earning 2%, compounded annually, after 7 years

$y = 2,400(1.02)^7$

$y = 2,756.85$

25 Graph the equation.

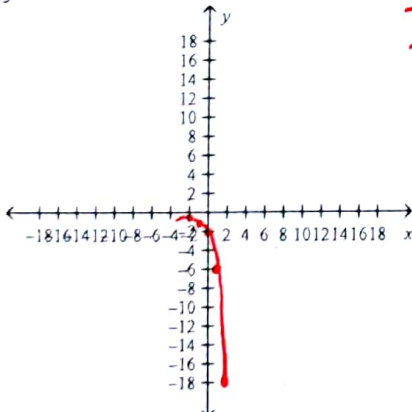
$y = 2^x$



x	y
-2	1/4
-1	1/2
0	1
1	2
2	4

26 Graph the equation.

$y = -2 * 3^x$



x	y
-2	-2/9
-1	-2/3
0	-2
1	-6
2	-18

Ch. 8 - Polynomials

27 Write the polynomial in standard form. Then name the polynomial based on its degree and number of terms.

$2 - 11x^2 - 8x + 6x^2$

$-5x^2 - 8x + 2$

Quadratic Trinomial

28 Write the polynomial in standard form. Then give the leading coefficient.

$-10x^3 + 2x + 12x^4 + x^2 - 5x^5 + 10$

$-5x^5 + 12x^4 - 10x^3 + x^2 + 2x + 10$

Leading Coeff. -5

29 Simplify each sum or difference.

$(4d^4 - d^2) + (d^4 + 7d^2 - 1)$

$5d^4 + 6d^2 - 1$

30 Simplify each sum or difference.

$(8w^2 - 4w - 4) + (6w^2 + 3w + 3)$

$2w^2 - 7w - 1$

31 Simplify each sum or difference.

$(3b^5 + b^3) + (b^5 + 7b^3 + 2)$

$2b^5 - 8b^3 + 2$

32 Find the product.

$8p(-3p^2 + 6p - 2)$

$-24p^3 + 48p^2 - 16p$

33 $4a^6(6a^6 - 2b^2)$

$24a^{12} - 8a^6b^2$

34 $(4x + 7)(5x - 3)$

$20x^2 - 12x$

$+ 35x - 21$

$20x^2 + 23x - 21$

35 $(2n+2)(2n-2)$

$$4n^2 - 4$$

36 $(3x-7)(3x-5)$

$$+ \begin{array}{r} 9x^2 - 15x \\ -21x + 35 \\ \hline 9x^2 - 36x + 35 \end{array}$$

37 $(5x-3)(x^3-5x+2)$

$$+ \begin{array}{r} 5x^4 - 25x^2 + 10x \\ -3x^3 \qquad + 15x - 6 \\ \hline 5x^4 - 3x^3 - 25x^2 + 25x - 6 \end{array}$$

38 $(2x-6)^2$

$$4x^2 - 24x + 36$$

39 Factor the polynomial.

$$r^2 - 36$$

$$(r+6)(r-6)$$

40 Factor the polynomial.

$$16b^2 - 81$$

$$(4b+9)(4b-9)$$

41 The length of a rectangle is $3x-4$. The area is

$$6x^2 - 2x - 8. \text{ What is the other side length?}$$

$$2(3x^2 - x - 4)$$

$$2(3x-4)(x+1)$$

$$2(x+1)$$