

PRACTICE FINAL (PLUS GEOMETRY & TRIGONOMETRY)

Math 96

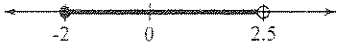
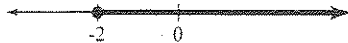

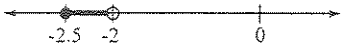
TEST FORM H

CLASS \_\_\_\_\_

SCORE \_\_\_\_\_

GRADE \_\_\_\_\_

ANSWERS

1. Evaluate  $4x^2 - 2xy^2$  for  $x = \frac{1}{2}$  and  $y = -2$ .  
 a)  $-7$                       b)  $-3$                       c)  $5$                       d)  $0$
2. Compute and simplify.  $16 - 8 \div 4 \cdot 2 - 1$   
 a)  $11$                       b)  $3$                       c)  $14$                       d)  $15$
3. Solve.  $3(y+4) - 6(y-1) = -3$   
 a)  $\frac{1}{3}$                       b)  $2$                       c)  $7$                       d)  $-5$
4. Solve.  $3 - 4x \geq 2x - 15$   
 a)  $\{x|x \geq 3\}$               b)  $\{x|x \leq 2\}$               c)  $\{x|x \leq 3\}$               d)  $\{x|x \geq -3\}$
5. What percent of 73 is 5.11?  
 a)  $14.29\%$               b)  $0.07\%$               c)  $373\%$               d)  $7\%$
6. Factor.  $3x^2 - 25x + 8$   
 a)  $(3x+1)(x-8)$                       b)  $(3x-1)(x-8)$   
 c)  $(3x-4)(x-2)$                       d)  $(3x-4)(x+2)$
7. Identify the graph of the solution set for  $1 < -4t - 7 \leq 3$ .  
 a)               b)   
 c)               d) 

1. \_\_\_\_\_

2. \_\_\_\_\_

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7. \_\_\_\_\_

TEST FORM H

ANSWERS

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9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

8. Solve, if possible, using the elimination method.

$$x + 2y = 15,$$

$$3x + 5y = 44$$

What is the y-coordinate?

- a) -1      b) 1      c) 0      d) not possible

9. Simplify.  $(-2x^{-2}y^3)^3$

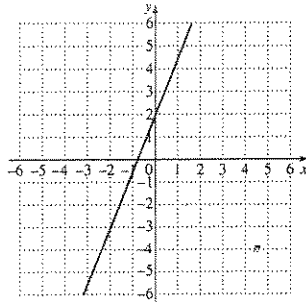
- a)  $\frac{-6y^9}{x^6}$       b)  $\frac{-8y^9}{x^6}$       c)  $-8xy^6$       d)  $-6xy^6$

10. Solve.  $x^2 + 7x = 5$

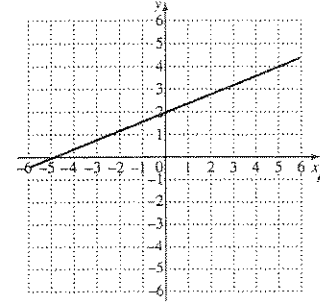
- a)  $\frac{-7 \pm \sqrt{29}}{2}$       b)  $\frac{7 \pm \sqrt{69}}{2}$       c)  $\frac{-7 \pm \sqrt{69}}{2}$       d)  $\frac{7 \pm \sqrt{29}}{2}$

11. Graph.  $2x - 5y = -10$

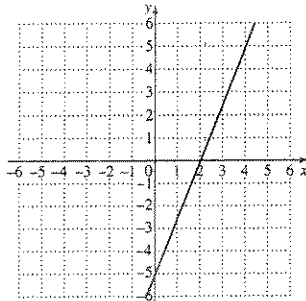
a)



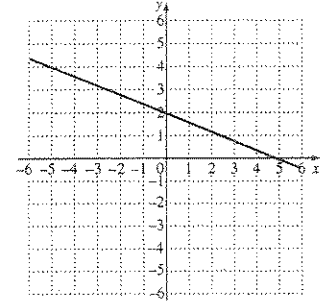
b)



c)



d)



TEST FORM H

12. Multiply.  $(5a-2)(2a+3)$

- a)  $10a^2 + 11a - 5$       b)  $10a^2 - 11a + 6$   
 c)  $10a^2 + 4a - 6$       d)  $10a^2 + 11a - 6$

13. Divide and, if possible, simplify.  $\frac{x^2 - 25}{4x^2} \div \frac{x+5}{6x}$

- a)  $\frac{3(x-5)}{2x}$       b)  $\frac{(x+5)^2(x-5)}{24x^3}$   
 c)  $\frac{3(x+5)}{2x}$       d)  $\frac{3(x-5)}{2x^3}$

14. Simplify.  $\frac{7}{x-3} - \frac{4}{x^2-9} + \frac{3}{x^2-6x+9}$

- a)  $\frac{7x^2 - x - 42}{(x-3)^2(x+3)}$       b)  $\frac{7x^2 + 41x - 42}{(x+3)^2(x-3)}$   
 c)  $\frac{7x^2 - x - 57}{(x-3)^2(x+3)}$       d)  $\frac{7x^2 - x - 60}{(x+3)^2(x-3)}$

15. Divide and write scientific notation for the result.

$$\frac{26.23 \times 10^{-12}}{6.1 \times 10^{-6}}$$

- a)  $4.3 \times 10^{-18}$     b)  $4.3 \times 10^6$     c)  $4.3 \times 10^{-6}$     d)  $4.3 \times 10^2$

ANSWERS

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

15. \_\_\_\_\_

TEST FORM H

ANSWERS

16. \_\_\_\_\_

16. Simplify:  $\frac{\sqrt[4]{a^3}}{\sqrt[5]{a}}$ .

- a)  $\sqrt[20]{a^5}$       b)  $\sqrt[20]{a^7}$       c)  $\sqrt[9]{a^7}$       d)  $\sqrt[20]{a^{11}}$

17. \_\_\_\_\_

17. Find the slope of the line containing the points (5, -8) and (-2, -4).

- a)  $-\frac{7}{4}$       b)  $\frac{4}{7}$       c)  $-\frac{4}{3}$       d)  $-\frac{4}{7}$

18. \_\_\_\_\_

18. Find the common ratio of the geometric sequence

$4\frac{1}{4}, 5\frac{2}{3}, 7\frac{5}{9}, \dots$

- a)  $\frac{4}{3}$       b)  $\frac{3}{4}$       c)  $\frac{3}{2}$       d)  $\frac{2}{3}$

19. \_\_\_\_\_

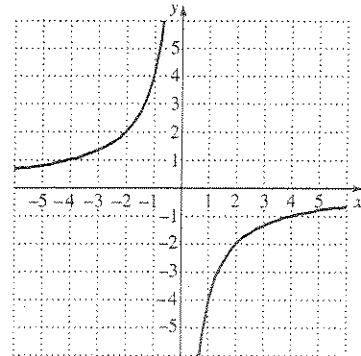
19. Write the point-slope equation for the line which contains the point (5, -1) and has a slope of  $\frac{2}{3}$ .

- a)  $y+1 = \frac{2}{3}(x-5)$       b)  $y-5 = \frac{2}{3}(x+1)$   
 c)  $y+1 = \frac{2}{3}(x+5)$       d)  $y-5 = \frac{2}{3}(x-1)$

20. \_\_\_\_\_

20. What is the equation corresponding to the following graph?

- a)  $\frac{y^2}{16} - \frac{x^2}{4} = 1$   
 b)  $xy = -4$   
 c)  $xy = -13$   
 d)  $\frac{x^2}{4} - \frac{y^2}{16} = 1$



## TEST FORM H

21. Ronald runs 3 km/h faster than Ramon runs. Ramon runs 15 km in the same time that Ronald runs 16.8 km. What is Ronald's speed?

a) 13.4 km/h    b) 28 km/h    c) 22 km/h    d) 25 km/h

22. Subtract.  $(9x^3 - 4x^2 - 10x + 11) - (3x^3 - 7x^2 - 3x + 3)$

a)  $6x^3 - 11x^2 - 13x + 8$     b)  $6x^3 + 3x^2 - 13x - 14$

c)  $6x^3 + 3x^2 - 7x + 8$     d)  $6x^3 + 2x^2 - 13x + 8$

23. Perform the indicated operation.  $(5x - 2)^2$

a)  $25x^2 + 4$     b)  $25x^2 + 20x + 4$

c)  $25x^2 - 14x + 4$     d)  $25x^2 - 20x + 4$

24. Solve.  $\sqrt{4x+1} + 3 = 6$

a) 2    b)  $6\frac{1}{2}$     c) 8    d) 20

25. Multiply.  $-3x^4(-2x^3 + 4x^2 - 5x)$

a)  $6x^7 - 12x^6 - 15x^5$     b)  $6x^{12} - 12x^8 + 15x^4$

c)  $6x^7 - 12x^6 + 15x^5$     d)  $-5x^7 + x^6 + 8x^5$

## ANSWERS

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22. \_\_\_\_\_

23. \_\_\_\_\_

24. \_\_\_\_\_

25. \_\_\_\_\_

TEST FORM H

ANSWERS

26. \_\_\_\_\_

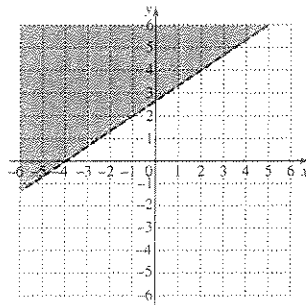
26. The hypotenuse of a right triangle is 37 cm and the length of a leg is 12 cm. Find the length of the other leg.

- a) 38.9 cm    b) 35 cm    c) 25 cm    d) 24.5 cm

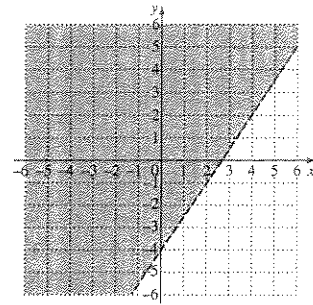
27. \_\_\_\_\_

27. Graph.  $y < \frac{2}{3}x - 4$

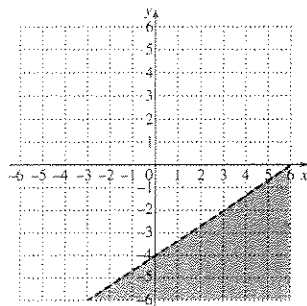
a)



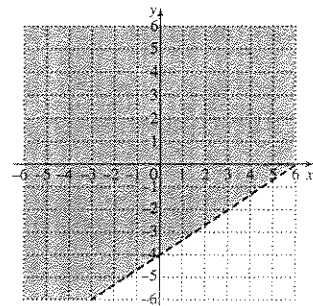
b)



c)



d)



28. \_\_\_\_\_

28. If  $y$  varies directly as  $x$  and  $y = 9$  when  $x = 12$ , find the equation of variation.

- a)  $y = \frac{4}{3}x$     b)  $y = 108x$     c)  $y = \frac{3}{4}x$     d)  $y = \frac{108}{x}$

29. \_\_\_\_\_

29. Given the function  $f(x) = 3x^2 - 4x - 9$ , find  $f(-2)$ .

- a) -13    b) 35    c) 11    d) -5

## TEST FORM H

30. Multiply and simplify.  $(3\sqrt{2} - \sqrt{5})(3\sqrt{2} + \sqrt{5})$

- a) 13      b) 23      c)
- $9\sqrt{2} - 5$
- d)
- $9\sqrt{2} - \sqrt{5}$

31. Factor.  $64t^2 - 25$

- a)
- $(8t - 5)(8t - 5)$
- b)
- $(8t + 5)(8t - 5)$
- 
- c)
- $(32t - 5)(32t + 5)$
- d)
- $(8t + 5)(8t + 5)$

32. Sally and Frank are sewing a patchwork quilt for their parents' thirtieth wedding anniversary. If Sally sews alone, she can finish the quilt in 15 hr. If Frank sews alone, he can finish the quilt in 20 hr. How long will it take them to finish the quilt if they work together?

- a) 17.5 hr      b) 12.7 hr      c) 10 hr      d) 8.6 hr

33. Simplify.  $\frac{\frac{2}{3x} + \frac{3}{x}}{\frac{9}{2x} - \frac{8}{x}}$

- a)
- $\frac{-77}{6x^2}$
- b)
- $\frac{-22}{21}$
- c)
- $\frac{15}{4}$
- d)
- $\frac{22}{75}$

34. Each weekend of the basketball season at Frank's college, 56 % of the students attend the basketball games. Of the 4500 total students, how many students go to the games?

- a) 2520      b) 252      c) 2615      d) 2000

## ANSWERS

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31. \_\_\_\_\_

32. \_\_\_\_\_

33. \_\_\_\_\_

34. \_\_\_\_\_

## TEST FORM H

## ANSWERS

35. \_\_\_\_\_
35. Find the  $x$ -intercept of the graph of  $2x - 2y = -20$ .
- a) (10,0)    b) (0,-10)    c) (-10,0)    d) (0,10)
36. \_\_\_\_\_
36. The length of a rectangle is 1 m more than the width. The diagonal is 29 m. Find the length of the rectangle.
- a) 28 m    b) 20 m    c) 22 m    d) 21 m
37. \_\_\_\_\_
37. Find the vertex of the graph of  $y = 3x^2 - 6x - 4$ .
- a) (-1,6)    b) (1,-7)    c) (0,-4)    d) (2,-4)
38. \_\_\_\_\_
38. Solve the given formula for  $z$ .  $\frac{1}{x} = \frac{1}{y} - \frac{1}{z}$
- a)  $z = x - y$     b)  $z = -(x + y)$     c)  $z = \frac{xy}{x - y}$     d)  $z = \frac{1}{xyz}$
39. \_\_\_\_\_
39. Solve.  $\frac{2x}{x-1} + \frac{3}{x} - 2 = \frac{2}{x(x-1)}$
- a) 1    b) 5    c) 2    d) no solution
40. \_\_\_\_\_
40. Simplify:  $\log_3 729$ .
- a) 6    b) 3    c) 2    d) 5

## TEST FORM H

41. Find  $(f \circ g)(x)$  if  $f(x) = x - x^2$  and  $g(x) = 3x - 2$ .

- a)  $-4x^2 - 15x - 12$       b)  $-9x^2 + 15x - 6$   
 c)  $9x^2 - 15x + 6$       d)  $9x^2 + 15x - 6$

42. Determine whether this infinite geometric series has a limit. If a limit exists, find it.

$$-10 - 15 - 22.5 - \dots$$

- a) 0.5      b) 0      c) no limit      d) 1

43. Find the total rebound distance of a ball that is dropped from a height of 9 m, with each rebound three-fifths of the preceding one.

- a) 11 m      b)  $10\frac{1}{2}$  m      c)  $13\frac{1}{2}$  m      d) 12 m

44. Two squares are such that the sum of their areas is  $7 \text{ m}^2$  and the difference of their areas is  $3 \text{ m}^2$ . Find the length of a side of each square.

- a)  $\sqrt{5}$  m,  $\sqrt{2}$  m      b)  $\sqrt{2}$  m, 5 m  
 c)  $2\sqrt{2}$  m, 2 m      d)  $2\sqrt{5}$  m,  $2\sqrt{2}$  m

45. Given  $\log_a 4 = 1.386$ ,  $\log_a 5 = 1.609$ , and  $\log_a 6 = 1.792$ , find  $\log_a 36$ .

- a) 4.604      b) 3.584      c) 4.787      d) 3.218

46. Determine the type of number that the solutions of  $x^2 + 6x + 10 = 0$  will be.

- a) no solution      b) complex  
 c) rational      d) irrational

47. Rationalize the denominator:  $\frac{\sqrt{3}}{5 - \sqrt{10}}$ .

- a)  $\frac{7\sqrt{5} + \sqrt{15}}{19}$       b)  $\frac{7\sqrt{3} + \sqrt{15}}{42}$   
 c)  $\frac{5\sqrt{5} - \sqrt{30}}{19}$       d)  $\frac{5\sqrt{3} + \sqrt{30}}{15}$

## ANSWERS

41. \_\_\_\_\_

42. \_\_\_\_\_

43. \_\_\_\_\_

44. \_\_\_\_\_

45. \_\_\_\_\_

46. \_\_\_\_\_

47. \_\_\_\_\_

## TEST FORM H

## ANSWERS

48. \_\_\_\_\_

48. Solve.

$$\begin{aligned} -x + 5y - z &= 45, \\ -5x - 5y + 2z &= -50, \\ 2x + y - 2z &= -25 \end{aligned}$$

What is the y-coordinate?

- a) 10      b) 5      c) 25      d) 15

49. \_\_\_\_\_

49. Find the 8<sup>th</sup> term in the expansion of  $(a + x)^{13}$ .

- a)
- $1287a^7x^6$
- b)
- $1716a^6x^7$
- c)
- $1287a^7x^6$
- d)
- $1716a^7x^6$

50. \_\_\_\_\_

50. Solve:  $\sqrt{7x-5} + \sqrt{15x+4} = \sqrt{30x+31}$ .

- a) 3      b) -4      c) 5      d) 4

51. \_\_\_\_\_

51. Solve:  $3x^3 + 14x = 23x^2$ .

- a)  $7, \frac{2}{3}, 0$       b)  $\frac{3}{2}, 0$
- c) 0, 7      d)  $-7, -\frac{3}{2}, 0$

52. \_\_\_\_\_

52. Find the distance between the points  $(8, -3)$  and  $(-8, 1)$ .

- a)
- $16\sqrt{17}$
- b)
- $2\sqrt{109}$
- c)
- $4\sqrt{17}$
- d)
- $\sqrt{218}$

53. \_\_\_\_\_

53. Rosie's Palm Pirates, a manufacturer of electronic organizers, estimates that when  $x$  hundred Palm Pirates are made, the average cost per unit is given by  $C(x) = 0.3x^2 - 2.94x + 8.183$ , where  $C$  is in hundreds of dollars. What is the minimum cost per unit?

- a) \$106      b) \$98      c) \$10.60      d) \$0.98

TEST FORM H

54. Solve:  $|-2t - 5| \geq 9$ .

a)  $\left\{t \mid t \leq -\frac{14}{3} \text{ or } t \geq \frac{4}{3}\right\}$       b)  $\{t \mid t \leq -7 \text{ or } t \geq 2\}$

c)  $\{t \mid t \leq -7 \text{ and } t \geq 2\}$       d)  $\{t \mid t \leq 3 \text{ or } t \geq -14\}$

55. Solve:  $5^x = 2.3$ . Give exact answer in terms of common logarithms.

a)  $\frac{\log 2.3}{\log 5}$       b)  $\frac{\log 2.4}{\log 4}$       c)  $\frac{\log 4}{\log 2.4}$       d)  $\frac{\log 5}{\log 2.3}$

ANSWERS

54. \_\_\_\_\_

55. \_\_\_\_\_

Final Exam Form H

1. b   2. a   3. c   4. c   5. d   6. b   7. d   8. b   9. b   10. c   11. b  
 12. d   13. a   14. a   15. c   16. d   17. d   18. a   19. a   20. b   21. b  
 22. c   23. d   24. a   25. c   26. b   27. d   28. c   29. c   30. a   31. b  
 32. d   33. b   34. a   35. c   36. d   37. b   38. c   39. d   40. a   41. b  
 42. c   43. c   44. a   45. b   46. b   47. d   48. d   49. b   50. a   51. a  
 52. c   53. b   54. b   55. a