

Math 099 Final Exam Study Guide**Multiple Choice**

Identify the letter of the choice that best completes the statement or answers the question.

- When simplifying an expression, you ____ perform operations inside grouping symbols first.
a. always b. sometimes c. never
- A rational number is ____ a real number.
a. always b. sometimes c. never
- Name the set(s) of numbers to which 0.88 belongs.
a. rational numbers b. natural numbers, whole numbers, integers, rational numbers c. rational numbers, irrational numbers d. none of the above
- Which equation is an identity?
a. $5m - 4 = 6m + 7 - m$ b. $14 - (2v + 3) = -2v - 11$ c. $7w + 6 - w = 8w - 2(w - 3)$ d. $5y + 7 = 5y - 7$

Short Answer

Write an algebraic expression for the phrase.

- 6 times the sum of b and y
- Evaluate $|-x - 2y|$ for $x = 1$ and $y = -1$.

Simplify the expression.

- $5[(12 - 6)^2 \div 4]$
- $3^3 \cdot 32 + 12 \div 4$
- $-7.5 - (-7.5) + 7.1$
- $-\frac{6}{9} - \frac{4}{8}$
- $(-8)^3$
- $4c^5h^{-3}$
- $7x^{-8} \cdot 6x^3$
- $(3xy^3)^2(xy)^6$

Name the property the equation illustrates.

- $-2.1 \times 1 = -2.1$
- $7 + (5 + 10) = (7 + 5) + 10$

17. In which quadrant or on which axis would you find the point (2, 1)?

Solve the equation.

18. $\frac{2}{9}x - 5 = 4$

19. $2(y - 2) = 14$

20. $1.6x + 3.3 = 6.5$

21. $5x - 5 = 3x - 3$

22. The sum of two consecutive integers is 49. Write an equation that models this situation and find the values of the two integers.

23. Carlos and Maria drove a total of 313 miles in 6.4 hours. Carlos drove the first part of the trip and averaged 48 miles per hour. Maria drove the remainder of the trip and averaged 50 miles per hour. For approximately how many hours did Maria drive? Round your answer to the nearest tenth if necessary.

24. Solve the equation for a .

$$4a + 2 = 3b - 5$$

Graph the inequality.

25. $x \geq -4$

Solve the inequality. Then graph your solution.

26. $x + 2 > 6$

27. $-10 \leq 2x - 4 < 4$

Solve the inequality.

28. $20 + 16r \geq 6(r + 20)$

29. Evaluate $f(x) = x^2 + 1$ for $x = -3$.

Graph the function.

30. $y = -x + 1$

Find the slope of the line that passes through the pair of points.

31. (2, 5), (9, -3)

Find the x - and y -intercept of the line.

32. $2x + 3y = -18$

33. Write the polynomial in standard form.

$$4g - 6g^3 + 9g^2 - 2$$

Simplify the difference.

34. $(-7x - 5x^4 + 5) - (-7x^4 - 5 - 9x)$

Simplify the product.

35. $3p^4(4p^4 + 7p^3 + 4p + 1)$

Factor the polynomial.

36. $2x^3 + 4x^2 + 8x$

Find the square.

37. $(2x - 6)^2$

Find the product.

38. $(2p - 2)(2p + 2)$

Factor the expression.

39. $w^2 + 18w + 77$

40. $6x^2 + 5x + 1$

41. $r^2 - 49$

42. $3x^3 + 3x^2 + x + 1$

43. Factor completely.

$$6x^4 - 9x^3 - 36x^2 + 54x$$

44. Simplify $\sqrt{\frac{100}{81}}$.

Solve the equation by factoring.

45. $z^2 - 3z - 28 = 0$

Simplify the radical expression.

46. $-\sqrt{72x^2}$

Multiply.

$$47. \frac{y^2 - 16}{-4y} \cdot \frac{4y}{y - 4}$$

Divide.

$$48. \frac{x^2 + 9x + 20}{x^2 - 25} \div \frac{x + 4}{x - 4}$$

$$49. (6x^2 - 13x + 2) \div (3x - 2)$$

Add or subtract.

$$50. \frac{2x + 3}{x - 4} - \frac{x - 5}{x + 2}$$

Solve the equation. Check your solution.

$$51. \frac{2}{x^2 - 1} - \frac{1}{x - 1} = 1$$

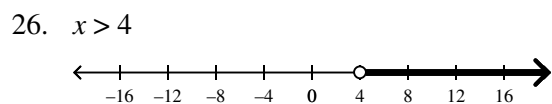
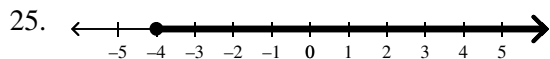
Math 099 Final Exam Study Guide Answer Section

MULTIPLE CHOICE

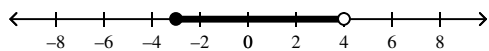
1. A
2. A
3. A
4. C

SHORT ANSWER

5. $6(b + y)$
6. 1
7. 45
8. 867
9. 7.1
10. $-\frac{7}{6}$
11. -512
12. $\frac{4c^5}{h^3}$
13. $\frac{42}{x^5}$
14. $9x^8y^{12}$
15. Identity Property of Multiplication
16. Associative Property of Addition
17. Quadrant I
18. $40\frac{1}{2}$
19. 9
20. 2
21. 1
22. $n + n + 1 = 49; n = 24; n + 1 = 25$
23. 2.9 hours
24. $\frac{3b - 7}{4}$



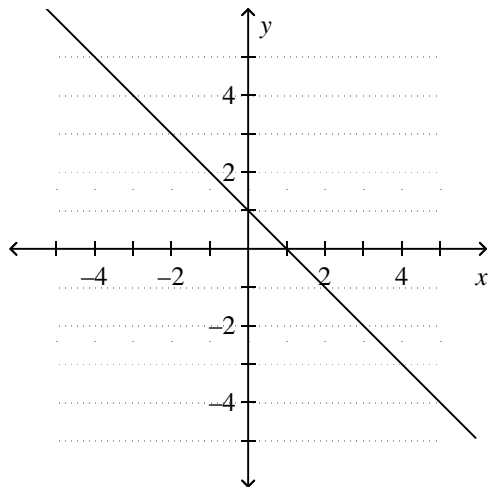
27. $-3 \leq x < 4$



28. $r \geq 10$

29. 10

30.



31. $-\frac{8}{7}$

32. x -intercept is -9 ; y -intercept is -6 .

33. $-6g^3 + 9g^2 + 4g - 2$

34. $2x^4 + 2x + 10$

35. $12p^8 + 21p^7 + 12p^5 + 3p^4$

36. $2x(x^2 + 2x + 4)$

37. $4x^2 - 24x + 36$

38. $4p^2 - 4$

39. $(w + 7)(w + 11)$

40. $(3x + 1)(2x + 1)$

41. $(r - 7)(r + 7)$

42. $(x + 1)(3x^2 + 1)$

43. $3x(x^2 - 6)(2x - 3)$

44. $\frac{10}{9}$

45. $z = -4$ or $z = 7$

46. $-6x\sqrt{2}$

47. $\frac{4(y + 4)}{-4}$

48. $\frac{x - 4}{x - 5}$

49. $2x - 3 - \frac{4}{3x - 2}$

50. $\frac{x^2 + 16x - 14}{(x + 2)(x - 4)}$

51. $x = -2$