

LASC

Math 115

Final Exam Study Guide

1. Solve for x : $\frac{x}{6} - \frac{x}{12} + \frac{x}{8} = \frac{5}{4}$
2. Find the slope and both intercepts of $10x - 5y = -20$.
3. Simplify: $\left(\frac{3x^{-2}}{-6x^3}\right)^{-3}$
4. Simplify: $\sqrt{5xy^3} \cdot \sqrt{20x}$
5. Solve and graph the solution set for $-3(2+x) - (x+4) < -14$.
6. Solve for x : $-5x + 6y = -18$
7. Solve: $-16x + 4 = 3(2x - 2) - 5(4x - 2)$
8. Solve the equation below for x . Check the solution and report any extraneous solutions.
$$\frac{x}{x-6} + \frac{6}{x+4} = \frac{-60}{x^2 - 2x - 24}$$
9. Simplify: $\frac{w^{-4}w^4x^{-5}y^{-2}z^{-3}}{x^{-7}y^2z^{-5}}$
10. Solve the system:
$$\begin{cases} 3x + 2y = -5 \\ 4x - 5y = -22 \end{cases}$$
11. Divide: $\frac{x^2 - 81}{4x + 20} \div \frac{9 - x}{x^2 - x - 30}$
12. Find the equation of the line that contains the points $(-5, 7)$ and $(-8, 1)$.
13. Simplify: $-2[-3x - 5(2x - 4y) - (y - 6x)]$
14. Solve for x : $y = -\frac{2}{3}x + \frac{2}{3}$
15. Solve the system by substitution method.
$$\begin{cases} x + 5y = -3 \\ 2x + 7y = -12 \end{cases}$$
16. Solve for m : $m^2 - 3 = 0$
17. Find the equation of the line with slope of $-\frac{3}{5}$ and which passes through the point $(10, 8)$.
18. Solve for x and graph the solution set on a number line. $-18 < 6x - 7 \leq 17$.
19. Factor completely: $24x^5y^2 + 22x^4y^3 - 30x^3y^4$

20. Simplify: $-3^2 - 4\{-20 \div (-10)(-2) - 2\} - (-2)^0$

21. Divide: $\frac{6x^3 - 2x^2 - 2x + 11}{2x + 2}$

22. Simplify: $\frac{40x^9y^6 - 5x^3y^2 + 10x^6y^4}{-10x^6y^4}$

23. Solve for y : $\sqrt{y+3} - 1 = y$

24. Solve by factoring: $x^2 - 7x - 18 = 0$

25. Solve by factoring: $3y^2 - 4y - 4 = 0$

26. Solve by the method of completing the square: $x^2 - 6x + 4 = 0$

27. Subtract: $\frac{-12 - 2x}{x^2 + x - 30} - \frac{6}{2x - 10}$

28. Bob's boat goes 25 mph. Find the rate of the current of the river if he can go 10 miles upstream in the same amount of time he can go 15 miles downstream.

29. Perform the indicated operations.

$$\frac{3^2(7^2 - 6 \cdot 5) + 3}{6(8) - 4 \cdot 7}$$

30. Evaluate $\frac{4x^2 - 3xy^2}{2x + y}$ given $x = -5$ and $y = 2$

31. Solve the following linear equation.

$$4(x - 2) - 6(x + 3) = -12$$

32. The sum of three consecutive odd integers is 315. Find the integers.

33. Find the slope intercept form of the equation of the line with slope -5 and passing through the point $(-3, 7)$.

34. Perform the indicated operations.

a. $(8x^5 - 12x^4 + 3) + (-15x^5 + 7x^4 - 6x)$

b. $(9y^2 + 14y - 15) - (6y^2 - 8y + 27)$

35. Find the product: $(5m - 4)(3m^2 + 2m - 9)$

36. Find the product: $(3m - 4n)^2$

37. Factor completely: $18x^3 - 39x^2 - 24x$

38. Factor: $25n^2 - 49m^2$

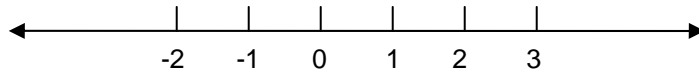
39. Multiply: $\frac{2y^2 + 9y - 5}{3y^2 + 13y - 10} \cdot \frac{3y^2 - 11y + 6}{4y^2 - 17y + 15}$

40. Perform the indicated operation. $\frac{y^2 - 39}{y^2 + 3y - 10} - \frac{y - 7}{y - 2}$

41. Solve: $\frac{y}{y+3} + \frac{2}{y-3} = \frac{12}{y^2 - 9}$

Answers

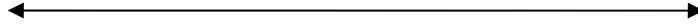
1. $\{6\}$
2. $m = 2$, x -int *ercept* $= (-2, 0)$ & y -int *ercept* $= (0, 4)$
3. $-8x^{15}$
4. $10xy\sqrt{y}$
5. $S.S. = (1, \infty)$



6. $x = \frac{6}{5}y + \frac{18}{5}$ or $x = \frac{6y + 18}{5}$
7. $\{0\}$
8. $\{-6\}$, $x = -4$ is an extraneous solution.
9. $\frac{x^2 z^2}{y^4}$
10. $\{(-3, 2)\}$
11. $\frac{(x+9)(x-6)}{4}$ or $\frac{x^2 + 3x - 54}{4}$
12. $y = 2x + 17$
13. $14x - 38y$
14. $x = -\frac{3}{2}y + 1$
15. $\{(-13, 2)\}$
16. $\{\pm\sqrt{3}\}$

17. $y = -\frac{3}{5}x + 14$

18. $\left(-\frac{11}{6}, 4\right]$



19. $2x^3y^2(4x-3y)(3x+5y)$

20. 14

21. $3x^2 - 4x + 3 + \frac{5}{2x+2}$

22. $-4x^3y^2 + \frac{1}{2x^3y^2} - 1$

23. $\{1\}$, $y = -2$ is extraneous.

24. $\{-2, 9\}$

25. $\left\{-\frac{2}{3}, 2\right\}$

26. $\{3 \pm \sqrt{5}\}$

27. $-\frac{5}{x-5}$

28. 5 mph

29. $\frac{87}{10}$

30. -20

31. $\{-7\}$

32. 103, 105, & 107

33. $y = -5x - 8$

34. a) $-7x^5 - 5x^4 - 6x + 3$

b) $3y^2 + 22y - 42$

35. $15m^3 - 2m^2 - 53m + 36$

36. $9m^2 - 24mn + 16n^2$

37. $3x(2x+1)(3x-8)$

38. $(5n-7m)(5n+7m)$

39. $\frac{2y-1}{4y-5}$

40. $\frac{2}{y+5}$

41. $\{-2\}$, $y = 3$ is extraneous.