Math 52 Practice Test #4

Appointments can be made at www.rccmathlab.com
My appointment is for: ____________ at ______:

DON'T FORGET TO BRING A PHOTO ID FOR THE TEST! No calculators allowed!

Find the LCD. Do not combine fractions.

1. \[ \frac{8}{45x^4y^6} + \frac{1}{30x^6y^2} \]

The LCD is \[ \square ] .

Find the LCD of the rational expression in the given list.

2. \[ \frac{3}{z}, \frac{2}{z-7} \]

The LCD is \[ \square ] .

Identify the LCD of the rational expressions.

3. \[ \frac{8}{9-3x}, \frac{3}{x^2-9} \]

The LCD is \[ \square ] .

Write an equivalent rational expression with the given denominator.

4. \[ \frac{3+5c}{a^2b^2c} \text{ with denominator } a^2b^2c \]

\[ \frac{3+5c}{a^2b^2c} = \square \]

Write an equivalent rational expression with the given denominator.

5. \[ \frac{x-7}{x+7} \text{ with denominator } x^2-49 \]

\[ \frac{x-7}{x+7} = \square \]

Find the LCD of the rational expressions. Then rewrite each as an equivalent rational expression with the LCD.

6. \[ \frac{1}{x-5} \text{ and } \frac{5x}{5-x} \]

What is the least common denominator of the rational expressions?

- \( -(x-5) \)
- \( x^2-10x+25 \)
- \( x^2-25 \)
- \( 5x \)

Rewrite \[ \frac{1}{x-5} \] with the LCD. Choose the correct answer below.

- \[ \frac{-1}{-(x-5)} \]
- \[ \frac{1}{5x} \]
- \[ \frac{-1}{x-5} \]
- \[ \frac{-5x(x+5)}{x^2-25} \]

Rewrite \[ \frac{5x}{5-x} \] with the LCD. Choose the correct answer below.

- \[ \frac{5x}{x-5} \]
- \[ \frac{-5x(x+5)}{x^2-25} \]
Identify the LCD and then write each as an equivalent rational expression with the denominator.

7. \[ \frac{v+1}{v^2 - 9}, \frac{v+2}{v^2 - 2v - 3} \]

The LCD is [ ].

\[ \frac{v+1}{v^2 - 9} = [ ] \]

\[ \frac{v+2}{v^2 - 2v - 3} = [ ] \]

Find the sum below.

8. \[ \frac{7}{4x^2y} + \frac{5}{9xy^2} \]

\[ \frac{7}{4x^2y} + \frac{5}{9xy^2} = [ ] \]

Add. Write your answer in lowest terms.

9. \[ \frac{x}{x - 4} + \frac{2}{x + 4} \]

\[ \frac{x}{x - 4} + \frac{2}{x + 4} = [ ] \]

Find the sum.

10. Find the sum of \[ \frac{x + 9}{x^2 + x - 90} \] and \[ \frac{x - 10}{x^2 + 19x + 90} \].

The sum is [ ].

Find the difference and simplify, if necessary.

11. \[ \frac{x+3}{x+2} - \frac{x^2 - x}{x^2 + 4x + 4} \]

\[ \frac{x+3}{x+2} - \frac{x^2 - x}{x^2 + 4x + 4} = [ ] \]

Perform the indicated operation.

12. \[ \frac{3x}{3x + 7} - 1 \]

\[ \frac{3x}{3x + 7} - 1 = [ ] \]

Simplify the complex rational expression using the least common denominator.

13. \[ \frac{8}{5} - \frac{1}{15} \]

\[ \frac{8}{5} - \frac{1}{15} = [ ] \]

14. \[ \frac{7}{49} + \frac{4}{28} \]

\[ \frac{7}{49} + \frac{4}{28} = [ ] \]

Simplify the complex rational expression.

15. \[ \frac{\frac{1}{9} + 1}{4} - \frac{3}{1} \]

The simplified expression is [ ].
Simplify the complex rational expression by using the least common denominator.

16. \[
\frac{5}{x + 7} - \frac{10}{x + 7} = \[
\frac{5}{x + 7} - 10
\]

Solve the equation and state the solution set.

17. \[
\frac{3}{5y} - \frac{1}{4} = \frac{3}{20y} - \frac{1}{40}
\]

Select the correct choice below and fill in any answer boxes in your choice.

○ A. The solution set is \{ \}
○ B. The solution set is \ø.

18. \[
\frac{2}{3x} + \frac{1}{4} = \frac{46}{6x} - \frac{1}{3}
\]

Select the correct choice below and fill in any answer boxes in your choice.

○ A. The solution set is \{ \}
○ B. The solution set is \ø.

19. \[
\frac{3}{x + 4} + 2 = \frac{12}{x + 4}
\]

Select the correct choice below and fill in any answer boxes in your choice.

○ A. The solution set is \{ \}
○ B. There is no solution.

Solve the equation and state the solution set. Remember to identify the values of the variable for which the expressions in each rational equation are undefined.

20. \[
\frac{5}{a - 4} + \frac{6}{a + 4} = \frac{-48}{a^2 - 16}
\]

Select the correct choice below and fill in any answer boxes in your choice.

○ A. The solution set is \{ \}
○ B. There is no solution.

Solve the equation for the indicated variable.

21. \[
W = \frac{A}{L} \quad \text{for} \quad L
\]

\[
L = \]

Select the correct choice below and fill in any answer boxes in your choice.

○ A. The solution set is \{ \}
○ B. The solution set is \ø.

22. \[
\frac{1}{r} + \frac{1}{q} = \frac{1}{b} \quad \text{for} \quad b
\]

\[
b = \]

Select the correct choice below and fill in any answer boxes in your choice.

○ A. The solution set is \{ \}
○ B. The solution set is \ø.

23. \[
\frac{7}{3} = \frac{x + 3}{6}
\]

The solution set is \{ \}

Solve the proportion.

Find the length.

24. Find the length of side \( XY \) given that \( \triangle MNP \) is similar to \( \triangle XYZ \).
Word Problems.

25. If 2 dollars can be exchanged for 57.38 Russian rubles. How many Russian rubles can be obtained for 1600 dollars?

☐ Russian rubles

26. Amiri can deliver his newspaper in 86 minutes. It takes Horus 65 minutes to do the same route. How long would it take them to deliver the newspaper if they work together?

It would take approximately ☐ minutes.

27. Working with your cousin, you can refinish a table in 6 hours. Working alone, your cousin can complete the job in 9 hours. How long would it take you to refinish the table working alone?

☐ hours

28. Working with your cousin, you can refinish a table in 4 hours. Working alone, your cousin can complete the job in 5 hours. How long would it take you to refinish the table working alone?

☐ hours

29. Joe and Nancy decide to take a road trip. The first 33 miles of the drive is pretty easy, while the last 38 miles of the drive is filled with curves. They drove at an average of 6 miles per hour faster for the first 33 miles of the trip. The entire trip took 5 hours. How fast were Joe and Nancy driving for the first 33 miles of the trip?

The speed for the first 33 miles of the trip was ☐ miles per hour.

Find the square roots.

30. Find the square roots of 16.

Select the correct choice below and, if necessary fill in the answer box within your choice.

☐ A. The square roots of 16 are ☐.
☐ B. The square roots are not real numbers.

Simplify

31. $-\sqrt{36}$

The answer is ☐.

Find the exact value of the square root without a calculator.

32. $\sqrt{0.25}$

$\sqrt{0.25} = ☐$

Evaluate the expression.

33. $\sqrt{225} - 144$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $\sqrt{225} - 144 = ☐$
☐ B. The square root is not a real number.
34. If the square root is irrational, write the approximate value rounded to two decimal places. If the square root in not a real number. So state.

\[
\sqrt{9^2 - (4)(-1)(-20)}
\]

Select the correct choice below and fill in any answer boxes in your choice.

○ A. \( \sqrt{9^2 - (4)(-1)(-20)} = \) [ ]

○ B. The answer is not a real number.

Tell if the square is rational, irrational, or not a real number.

35. If the square root is rational, find the exact value, if the square root is rational; write the approximate value rounded to two decimal places.

\[
\sqrt{-144}
\]

Select the correct choice below and fill in any answer boxes in your choice.

○ A. The square root is rational. The exact value is [ ].

○ B. The square root is irrational. The approximate value is [ ].

○ C. The square root is not a real number.

Simplify the square root.

36. \( \sqrt{(x - 3)^2} \)

\[
\sqrt{(x - 3)^2} = [ ]
\]

Simplify by factoring.

37. \( \sqrt{150} \)

\[
\sqrt{150} = [ ]
\]

Simplify the square root, if possible.

38. \( \sqrt{475} \)

\[
\sqrt{475} = [ ]
\]

Simplify the expression.

39. \( \frac{25 + \sqrt{125}}{5} \)

\[
\frac{25 + \sqrt{125}}{5} = [ ]
\]

Simplify the expression. Assume the variable represents a nonnegative real number.

40. \( \sqrt{x^{28}} \)

Select the correct choice below and fill in any answer boxes in your choice.

○ A. \( \sqrt{x^{28}} = [ ] \)

○ B. The expression cannot be simplified.

Simplify the expression. Assume that the variable represents a positive real number.

41. \( \sqrt[6]{16y^6} \)

\[
\sqrt[6]{16y^6} = [ ]
\]

Simplify the expression. Assume that all variables represent nonnegative real number.

42. \( \frac{\sqrt[4]{y^4}}{\sqrt[4]{81}} \)

\[
\frac{\sqrt[4]{y^4}}{\sqrt[4]{81}} = [ ]
\]
Simplify. Assume that all variables represent nonnegative real numbers.

43. \( \sqrt{\frac{y^4}{100}} \)

\( \sqrt{\frac{y^4}{100}} = [] \)

Simplify the square root. Assume that variables represent positive real numbers.

44. \( \sqrt{\frac{50a^3}{8a}} \)

\( \sqrt{\frac{50a^3}{8a}} = [] \)

Subtract the square root expressions.

45. \( 6\sqrt{6} - 7\sqrt{6} \)

\( 6\sqrt{6} - 7\sqrt{6} = [] \)

Subtract. Assume the variable represents a positive real number.

46. \( \sqrt{y} - 11\sqrt{y} \)

\( \sqrt{y} - 11\sqrt{y} = [] \)

Subtract. Simplify by collecting like radical terms if possible.

47. \( 2\sqrt{80} - 2\sqrt{5} \)

\( 2\sqrt{80} - 2\sqrt{5} = [] \)

Add or subtract, as indicated.

48. \( 1 + 2\sqrt{20} + 7 + 3\sqrt{45} \)

\( 1 + 2\sqrt{20} + 7 + 3\sqrt{45} = [] \)

49. \( 7 + 2\sqrt{12} + 7 + 3\sqrt{27} \)

\( 7 + 2\sqrt{12} + 7 + 3\sqrt{27} = [] \)

Perform the indicated Operation(s) and simplify.

50. \( 4\sqrt{32} - 6\sqrt{10} + 7\sqrt{8} \)

\( 4\sqrt{32} - 6\sqrt{10} + 7\sqrt{8} = [] \)

51. \( 2\sqrt{12} - 3\sqrt{22} + 4\sqrt{27} \)

\( 2\sqrt{12} - 3\sqrt{22} + 4\sqrt{27} = [] \)

Subtract.

52. \( 3\sqrt{\frac{11}{25}} - 2\sqrt{\frac{11}{16}} \)

\( 3\sqrt{\frac{11}{25}} - 2\sqrt{\frac{11}{16}} = [] \)

Multiply and simplify. Assume that all expressions under the radicals represent nonnegative.

53. \( \sqrt{5x^3} \cdot \sqrt{35x} \)

Choose the correct product.

- A. \( 5x^2 \)
- B. \( 5x^2 \sqrt{7} \)
- C. \( x^2 \sqrt{175} \)
- D. \( 5x \sqrt{7x} \)

54. \( \sqrt{5x^7} \cdot \sqrt{35x} \)

Choose the correct product.

- A. \( 5x^4 \sqrt{7} \)
- B. \( x^4 \sqrt{175} \)
- C. \( 5x^3 \sqrt{7x} \)
- D. \( 5x^4 \)
Simplify.

55. \(2\sqrt{3} \cdot 3\sqrt{27}\)

\(2\sqrt{3} \cdot 3\sqrt{27} = \square\)

Perform the indicated operation and simplify. Assume the variable represents a nonnegative real number.

56. \(\sqrt{y}(\sqrt{7y} - \sqrt{y})\)

\(\sqrt{y}(\sqrt{7y} - \sqrt{y}) = \square\)

Find the product using the FOIL method, and simplify.

57. \((6 + 5\sqrt{3})(5 - 4\sqrt{2})\)

\((6 + 5\sqrt{3})(5 - 4\sqrt{2}) = \square\)

Find the product using the FOIL method, and simplify. Assume the variable represents a nonnegative real number.

58. \((2\sqrt{3x} + 5\sqrt{x})(4\sqrt{3x} - 7\sqrt{x})\)

\((2\sqrt{3x} + 5\sqrt{x})(4\sqrt{3x} - 7\sqrt{x}) = \square\)

Multiply.

59. \((5 + \sqrt{2})^2\)

\((5 + \sqrt{2})^2 = \square\)

Multiply and simplify the product. Assume the variable represents nonnegative real numbers.

60. \((4\sqrt{x} + 2)^2\)

\((4\sqrt{x} + 2)^2 = \square\)
1. \(90x^6y^6\)
2. \(z(z - 7)\)
3. \(-3(x + 3)(x - 3)\)
4. \(\frac{3c + 5c^2}{a^2b^2c^2}\)
5. \((x - 7)^2\)
6. The first choice
   The first choice
   The second choice
7. \(\frac{(v + 3)(v - 3)(v + 1)}{v^2 + 2v + 1} - \frac{v^2 + 5v + 6}{(v + 3)(v - 3)(v + 1)}\)
8. \(\frac{63y + 20x}{36x^2y^2}\)
9. \(\frac{x^2 + 6x - 8}{(x - 4)(x + 4)}\)
10. \(\frac{2x^2 - x + 171}{(x - 9)(x + 9)(x + 10)}\)
11. \(\frac{6(x + 1)}{(x + 2)^2}\)
12. \(-\frac{7}{3x + 7}\)
13. \(\frac{46}{9}\)
14. \(\frac{1}{7}\)
15. \(\frac{10}{3}\)
16. \(-\frac{1}{2x + 13}\)
17. A, 2
18. A, 12
19. A, \(\frac{1}{2}\)
20. B
21. \(\frac{A}{W}\)
22. \(\frac{r q}{q + r}\)
23. 11
24. 8
25. 45,904
26. 37
27. 18
28. 20
29. 18
30. A, 4, -4
31. \(-6\)
32. 0.5
33. A, 9
34. A, 1
35. C
36. \(|x - 3|\)
37. \(5\sqrt{6}\)
38. \(5\sqrt{19}\)
39. \(5 + \sqrt{5}\)
40. A, \(x^4\)
41. \(4y^3\)
42. \(\frac{y^2}{9}\)
43. \(\frac{y^2}{10}\)
44. \(5a\)
45. \(-\sqrt{6}\)
46. \(-10\sqrt{y}\)
47. \(6\sqrt{5}\)
48. \(13\sqrt{5} + 8\)
49. \(13\sqrt{3} + 14\)
50. \(30\sqrt{2} - 6\sqrt{10}\)
51. \(16\sqrt{3} - 3\sqrt{22}\)
52. \(\frac{1}{10}\sqrt{11}\)
53. B
54. A
55. 54
56. \(y\sqrt{7} - y\)
57. \(30 - 24\sqrt{2} + 25\sqrt{3} - 20\sqrt{6}\)
58. \(-11x + 6x\sqrt{3}\)
59. \(27 + 10\sqrt{2}\)
60. \(16x + 16\sqrt{x + 4}\)