Math 96 Test 2 Study Guide

1. Simplify:
   \[
   \frac{6(v + 4)(3v + 5)}{54(v + 4)}
   \]

2. Simplify:
   \[
   \frac{w^2 + 10w + 24}{w + 6}
   \]

3. Simplify:
   \[
   \frac{v - 8}{v^2 - 16v + 64}
   \]

4. Perform the operation and simplify your answer as much as possible.
   \[
   \frac{2x + 10}{2x + 9} \cdot \frac{3x - 21}{x + 5}
   \]

5. Perform the operation and simplify your answer as much as possible.
   \[
   \frac{8x - 72}{x + 5} \div \frac{5x + 25}{x - 9}
   \]

6. Perform the operation and simplify your answer as much as possible.
   \[
   \frac{x^2 - 2x - 3}{3x - 3} \div \frac{x - 1}{x^2 - 5x + 6}
   \]

7. Perform the operation and simplify your answer as much as possible.
   \[
   \frac{x^2 - 4}{x - 3} \div \frac{4x - 12}{x^2 + 5x + 6}
   \]

8. Perform the operation and simplify your answer as much as possible.
   \[
   \frac{32x + 28}{9x - 81} \div \frac{8x + 7}{3x - 27}
   \]

9. Perform the operation and simplify your answer as much as possible.
   \[
   \frac{5x - 45}{9} \div \frac{x - 9}{3x}
   \]

10. Perform the operation and simplify your answer as much as possible.
    \[
    \frac{x^2 + x - 2}{x - 3} \div \frac{x^2 - 4}{3x - 9}
    \]

11. Perform the operation and simplify your answer as much as possible.
    \[
    \frac{x^2 + 5x + 6}{3x - 6} \div \frac{x^2 + 3x + 2}{x - 2}
    \]

12. Find the least common denominator of \( \frac{1}{4x} \) and \( \frac{3}{7x + 1} \)
13. Find the least common denominator of \( \frac{1}{2x - 6} \) and \( \frac{2x}{7x - 21} \)

14. Find the least common denominator of \( \frac{8}{x^2 + x - 42} \) and \( \frac{-2}{x^2 - 6x} \)

15. Perform the operation and simplify your answer as much as possible.

\[
\frac{c}{5c + 4} + \frac{3}{5c + 4}
\]

16. Perform the operation and simplify your answer as much as possible.

\[
\frac{x - 4y}{4x} - \frac{9x - 3y}{4x}
\]

17. Perform the operation and simplify your answer as much as possible.

\[
\frac{b^2 - 2b}{b^2 + 2b + 1} - \frac{3}{b^2 + 2b + 1}
\]

18. Perform the operation and simplify your answer as much as possible.

\[
\frac{x^2 - 7x}{x - 5} + \frac{3x - 5}{x - 5}
\]

19. Perform the operation and simplify your answer as much as possible.

\[
\frac{-7}{6c} + \frac{5}{9c}
\]

20. Perform the operation and simplify your answer as much as possible.

\[
\frac{3d - 2}{8d} - \frac{5d - 2}{6d}
\]

21. Perform the operation and simplify your answer as much as possible.

\[
\frac{-5}{4w^2} + \frac{7}{10w}
\]

22. Perform the operation and simplify your answer as much as possible.

\[
\frac{3}{x - 4} + \frac{4}{3x}
\]

23. Perform the operation and simplify your answer as much as possible.

\[
\frac{2}{x - 5} + \frac{3}{x + 4}
\]

24. Perform the operation and simplify your answer as much as possible.

\[
\frac{x + 8}{x + 7} - \frac{x - 2}{x}
\]

25. Perform the operation and simplify your answer as much as possible.

\[
\frac{x - 6}{x + 2} - \frac{2}{x + 5}
\]
26. Perform the operation and simplify your answer as much as possible.
\[
\frac{4x}{4x + 8} - \frac{x}{3x + 6}
\]

27. Perform the operation and simplify your answer as much as possible.
\[
\frac{2}{x + 3} - \frac{5}{4x + 12}
\]

28. Perform the operation and simplify your answer as much as possible.
\[
\frac{x + 6}{4x + 8} + \frac{x - 2}{5x + 10}
\]

29. Perform the operation and simplify your answer as much as possible.
\[
\frac{2x}{x - 3} - \frac{6x - 8}{5x - 15}
\]

30. Perform the operation and simplify your answer as much as possible.
\[
\frac{3}{x^2 - 9x + 18} - \frac{2}{x - 3}
\]

31. Perform the operation and simplify your answer as much as possible.
\[
\frac{3}{2x^2 + 9x + 9} - \frac{1}{2x^2 + 7x + 6}
\]

32. Perform the operation and simplify your answer as much as possible.
\[
\frac{3x - 21y}{x^2 - 36y^2} \cdot \frac{x^2 + 4xy - 12y^2}{x - 7y}
\]

33. Perform the operation and simplify your answer as much as possible.
\[
\frac{x^2 + xy - 12y^2}{x + 7y} \cdot \frac{x - 9y}{3x + 12y}
\]

34. Perform the operation and simplify your answer as much as possible.
\[
\frac{x^2 - 8xy + 12y^2}{x^2 - 81y^2} \div \frac{4x - 24y}{x + 9y}
\]

35. Perform the operation and simplify your answer as much as possible.
\[
\frac{x^2 + 6xy + 8y^2}{5x - 45y} \div \frac{x^2 - 8xy - 20y^2}{x - 9y}
\]

36. Simplify.
\[
\frac{2 - \frac{3}{7x}}{5 - \frac{3}{7x}}
\]

37. Simplify.
\[
\frac{\frac{1}{y} + 3}{\frac{1}{y} - 5}
\]
38. Simplify.
\[
\frac{1 - \frac{3}{x+6}}{\frac{9}{x+6} + x}
\]
39. Simplify.
\[
\frac{5 + \frac{10}{x+7}}{\frac{18}{x+7} + 9}
\]
40. Simplify.
\[
\frac{\frac{x}{25} - \frac{1}{x}}{\frac{6}{25} - \frac{6}{5x}}
\]
41. Simplify.
\[
\frac{1 - \frac{49}{x}}{1 - \frac{7}{x}}
\]
42. Simplify.
\[
\frac{6 - \frac{6}{w}}{6 - \frac{6}{w+1}}
\]
43. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\frac{7}{x} - \frac{1}{3} = \frac{2}{3x}
\]
44. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\frac{7}{6x} + \frac{5}{x} = 1
\]
45. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\frac{1}{4x - 20} - 3 = -\frac{7}{x - 5}
\]
46. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\frac{8}{4x - 24} - 1 = \frac{2}{x - 6}
\]
47. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\frac{1}{x - 2} + \frac{3}{x + 2} = \frac{8}{x^2 - 4}
\]
48. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\frac{1}{x - 5} + \frac{5}{x + 3} = \frac{8}{x^2 - 2x - 15}
\]
49. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\frac{x}{x + 6} = \frac{-5}{x + 8}
\]
50. Solve for $x$, If there is no solution, write “No Solution”:
\[
\frac{x}{3x - 8} = \frac{-2}{x}
\]
51. Solve for $x$, If there is no solution, write “No Solution”:
\[
x - 16 = -9 + \frac{30}{x}
\]
52. Solve for $x$, If there is no solution, write “No Solution”:
\[
6 = x - \frac{16}{x}
\]
53. Solve for $x$, If there is no solution, write “No Solution”:
\[
4 + \frac{3}{x - 1} = \frac{7}{x + 4}
\]
54. Solve for $x$, If there is no solution, write “No Solution”:
\[
\frac{x - 3}{x - 7} + 1 = \frac{x - 5}{x - 4}
\]
55. Solve for $x$, If there is no solution, write “No Solution”:
\[
\frac{x - 1}{x + 2} = \frac{x - 2}{x - 4} - 1
\]
56. Solve for $A$.
\[
P = \frac{9}{A}
\]
57. Solve for $T$.
\[
Pr = \frac{I}{T}
\]
58. Solve for $w$.
\[
B = \frac{(y - w)x}{4}
\]
59. Solve for $b$.
\[
\frac{b - b}{a} + \frac{b}{c} = 1
\]
60. Solve for $m$.
\[
\frac{5}{n} + \frac{6}{p} = \frac{7}{m}
\]
61. Suppose that $y$ varies directly with $x$, and $y = 8$ when $x = 16$. Write a direct variation equation that relates $x$ and $y$.
62. Suppose that $y$ varies directly with $x$, and $y = 2$ when $x = 16$. Find $y$ when $x = 7$
63. Suppose that $y$ varies inversely with $x$, and $y = 6$ when $x = 2$. Write an inverse variation equation that relates $x$ to $y$.
64. Suppose that $y$ varies inversely with $x$, and $y = 6$ when $x = 3$. Find $y$ when $x = 9$
65. Write an equation that expresses the relationship: \( u \) varies jointly with \( p \) and \( d \) and inversely with \( w \). In your equation use \( k \) as the constant of proportionality.

66. On a given planet, the weight of an object varies directly with the mass of the object. Suppose that an object whose mass is 7 kg weight 56 N. Find the weight of an object whose mass is 6 kg.

67. In an electrical circuit, the current passing through a conductor varies inversely with the resistance. Suppose that when the current is 10 A, the resistance is 16 ohms. What is the current when the resistance is 20 ohms?