Simplifying Radical Expressions:

1. Evaluate: $\sqrt{81}$
2. Evaluate: $\sqrt{\frac{49}{16}}$
3. Evaluate: $\sqrt{-25}$
4. Evaluate: $\sqrt{(-8)^2}$
5. Evaluate: $-\sqrt{24}$
6. Evaluate: $\sqrt{8}$
7. Evaluate: $\sqrt{-125}$
8. Evaluate: $-\sqrt{81}$
9. Evaluate: $\sqrt{\frac{16}{625}}$
10. Simplify: $\sqrt{u^{12}}$
11. Simplify: $\sqrt[3]{27x^9}$
12. Simplify: $\sqrt{27}$
13. Simplify: $\sqrt{125}$
14. Simplify: $\sqrt{200}$
15. Simplify: $\sqrt{75x^6}$
16. Simplify: $\sqrt{x^{11}}$
17. Simplify: $\sqrt{64x^7}$
18. Simplify: $\sqrt{28x^5}$
19. Simplify: $\sqrt[3]{32}$
20. Simplify: $\sqrt[4]{96}$
21. Simplify: $\sqrt[5]{3^6}$
22. Simplify: $\sqrt[6]{x^{19}}$
23. Simplify: $\sqrt[14]{16x^{14}}$
24. Simplify: $\sqrt[5]{128x^9}$

**Radical Arithmetic:**

25. Simplify: $4\sqrt{14} + 9\sqrt{14}$

26. Simplify: $\sqrt{8} - 2\sqrt{98}$

27. Simplify: $-5\sqrt{98} + \sqrt{50}$

28. Simplify: $\sqrt{20} + 3\sqrt{45} - 14\sqrt{5}$

29. Simplify: $8\sqrt{7} - 5\sqrt{63} + \sqrt{28}$

30. Simplify: $\sqrt{63w} - \sqrt{28w}$

31. Simplify: $\sqrt{2} \cdot \sqrt{7}$

32. Simplify: $\sqrt{12} \cdot \sqrt{6}$

33. Simplify: $\sqrt{72} \cdot 2\sqrt{96}$

34. Simplify: $\sqrt{7x} \cdot \sqrt{5x}$

35. Simplify: $\sqrt{3b} \cdot \sqrt{15b^2}$

36. Simplify: $\sqrt{18y^7} \cdot \sqrt{2y^2}$

37. Simplify: $\sqrt{7} \cdot \sqrt{12}$

38. Simplify: $\sqrt{4} \cdot \sqrt{24}$

39. Multiply and simplify your answer as much as possible:
   $\sqrt{7}(12 - \sqrt{3})$

40. Multiply and simplify your answer as much as possible:
   $9\sqrt{3}(\sqrt{14} - \sqrt{6})$

41. Multiply and simplify your answer as much as possible:
   $(4 - 5\sqrt{5})(4\sqrt{10} + 1)$

42. Multiply and simplify your answer as much as possible:
   $(6\sqrt{6} + 9\sqrt{5})(5\sqrt{6} - 7\sqrt{5})$

43. Square and simplify your answer as much as possible:
   $(\sqrt{x} + 2\sqrt{2})^2$

44. Multiply and simplify your answer as much as possible:
   $(\sqrt{x} - \sqrt{5})(\sqrt{x} + \sqrt{5})$

45. Simplify: $\frac{\sqrt{45}}{\sqrt{15}}$
46. Simplify: \( \frac{\sqrt{54}}{\sqrt{6}} \)

47. Simplify: \( \frac{\sqrt{75} + 10}{15} \)

48. Rationalize the denominator and simplify:
\( \frac{\sqrt{6}}{\sqrt{5}} \)

49. Rationalize the denominator and simplify:
\( \frac{9}{\sqrt{6}} \)

50. Rationalize the denominator and simplify:
\( \sqrt{\frac{10}{6}} \)

**Rational Exponents:**

51. Write the following as an exponential expression: \( \sqrt{x^2} \)

52. Write the following as a radical expression: \( x^{\frac{1}{2}} \)

53. Evaluate: \( 256^{\frac{1}{4}} \)

54. Evaluate: \( 8^{\frac{1}{3}} \)

55. Evaluate: \( (-125)^{\frac{1}{5}} \)

56. Evaluate: \( (-36)^{\frac{1}{2}} \)

57. Evaluate: \( 25^{\frac{3}{2}} \)

58. Evaluate: \( 16^{\frac{3}{4}} \)

59. Evaluate: \( \left( \frac{1}{16} \right)^{-\frac{3}{4}} \)

60. Evaluate: \( 4^{-\frac{3}{2}} \)

61. Simplify: \( y^{\frac{4}{7}} \cdot y^{\frac{2}{7}} \)

62. Simplify and write your answer using only positive exponents: \( \frac{y^{\frac{1}{7}}}{y^{\frac{3}{7}}} \)

63. Simplify and write your answer using only positive exponents: \( \frac{x^{\frac{3}{4}}}{y^{\frac{4}{4}}} \)
64. Simplify: \((v^3)^{\frac{1}{3}}\)

65. Simplify: \((x^{\frac{5}{3}})^2\)

**Solving Radical Equations:**

66. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{x} = 4
\]

67. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{x + 10} = 7
\]

68. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{x + 15} - 4 = 4
\]

69. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{2x^2 + 15} + 5 = 2
\]

70. Solve for \(x\), If there is no solution, write “No Solution”:
\[
1 = \sqrt{2x - 6} - 1
\]

71. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{5x + 12} = \sqrt{7x + 16}
\]

72. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{2x + 13} - \sqrt{5x + 7} = 0
\]

73. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{6x - 5} = x
\]

74. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{2x + 8} = x
\]

75. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{23 - x} = x - 3
\]

76. Solve for \(x\), If there is no solution, write “No Solution”:
\[
x - 1 = \sqrt{7x - 19}
\]

77. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{x^2 - 3x + 6} = x
\]

78. Solve for \(x\), If there is no solution, write “No Solution”:
\[
2x = \sqrt{5x^2 - 4x + 3}
\]

79. Solve for \(x\), If there is no solution, write “No Solution”:
\[
\sqrt{x} = -3
\]

**Rational Functions:**
80. Find all values of $x$ for which the expression is undefined:
\[
\frac{7}{10 - 2x}
\]

81. Find all values of $x$ for which the expression is undefined:
\[
\frac{x + 6}{x^2 - 49}
\]

82. Find all values of $x$ for which the expression is undefined:
\[
\frac{x - 2}{x^2 + 14x + 49}
\]

83. Find all values of $x$ that are not in the domain of $g$:
\[
g(x) = \frac{x + 1}{x^2 + 6x - 16}
\]

84. Find all values of $x$ that are not in the domain of $f$:
\[
f(x) = \frac{x - 1}{x^2 - 1}
\]

**Radical Functions:**

85. The function $f$ is defined as $f(x) = \sqrt{x} + 5$. Find $f(25)$.

86. The function $f$ is defined as $f(x) = \sqrt[3]{x} - 9$. Find $f(-55)$.

87. Find the domain of the function $h(x) = \sqrt{x} + 1$. Write your answer in interval notation.

88. Find the domain of the function $f(x) = \sqrt{x - 3}$. Write your answer in interval notation.

89. Find the domain of the function $f(x) = \sqrt{x - 1}$. Write your answer in interval notation.

90. Find the domain of the function $f(x) = \sqrt{2x + 8}$. Write your answer in interval notation.