

Simplifying Radicals Assignment

Write each expression in radical form.

1. $y^{\frac{4}{5}} =$

2. $(4c - 3)^{\frac{3}{4}} =$

Write each expression in exponential form.

3. $\sqrt[5]{x^2} =$

4. $\sqrt{(2 + a)} =$

Simplify the following expressions. Assume that all variables represent positive real numbers.

5. $\sqrt[4]{81} =$

6. $\sqrt{36a^6b^2} =$

7. $\sqrt{75} =$

8. $\sqrt[4]{\frac{48a^5}{b^8}} =$

9. $\sqrt[4]{162(3x + 5)^8} =$

10. $\frac{\sqrt{50x^6}}{\sqrt{2x^4}} =$

Simplify the following expressions. Assume that all variables represent positive real numbers.

11. $\frac{2}{\sqrt{6}} =$

12. $\frac{12}{\sqrt[3]{4}} =$

13. $\frac{3}{10 + \sqrt{5}} =$

14. $\frac{y - x}{\sqrt{y} - \sqrt{x}} =$

Simplifying Radicals Assignment

Simplify radicals and recognize like or unlike radicals.

15. $2\sqrt{3}; 3\sqrt{2};$

16. $3\sqrt{6}; \sqrt{24}$

17. $\sqrt[3]{250}; \sqrt[3]{54}; \sqrt[3]{16}$

18. $\sqrt[4]{2a^4b^9}; 6\sqrt[3]{2ab}; 3\sqrt[4]{2ab^5}$

Simplify the following expressions. Assume that all variables represent positive real numbers.

19. $(\sqrt[5]{-32})^2 =$

20. $\sqrt[5]{\sqrt{xy^3}} =$

Simplifying Radicals Assignment

ANSWERS

Write each expression in radical form.

1. $y^{\frac{4}{5}} = \sqrt[5]{y^4}$

2. $(4c - 3)^{\frac{3}{4}} = \sqrt[4]{(4c - 3)^3}$

Write each expression in exponential form.

3. $\sqrt[5]{x^2} = x^{\frac{2}{5}}$

4. $\sqrt{(2 + a)} = (2 + a)^{\frac{1}{2}}$

Simplify each expression

5. $\sqrt[4]{81} = \sqrt[4]{3^4} = \pm 3$

6. $\sqrt{36a^6b^2} = \sqrt{6^2 * (a^3)^2 * b^2} = 6a^3b$

7. $\sqrt{75} = \sqrt{3 * 5^2} = 5\sqrt{3}$

8. $\sqrt[4]{\frac{48a^5}{b^8}} = \frac{\sqrt[4]{2^4 * 3 * a * a^4}}{\sqrt[4]{b^4b^4}} = \frac{2a^4\sqrt[4]{3a}}{b^2}$

9. $\sqrt[4]{\frac{162(3x + 5)^8}{2 * 3^4 * (3x + 5)^4 * (3x + 5)^4}} = \sqrt[4]{\frac{3(3x + 5)^{2^4} * 2}{2 * 3^4 * (3x + 5)^4 * (3x + 5)^4}} = 3(3x + 5)^2\sqrt[4]{2}$

10. $\frac{\sqrt{50x^6}}{\sqrt{2x^4}} = \sqrt{\frac{5^2 * 2 * (x^3)^2}{2 * (x^2)^2}} = \frac{5x^3}{x^2} = 5x$

Simplify the following expressions (rationalize the denominator)

11. $\frac{2}{\sqrt{6}} = \frac{2}{\sqrt{6}} * \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{6}}{6} = \frac{\sqrt{6}}{3}$

12. $\frac{12}{\sqrt[3]{4}} = \frac{12}{\sqrt[3]{4}} * \frac{\sqrt[3]{4^2}}{\sqrt[3]{4^2}} = \frac{12\sqrt[3]{4^2}}{4} = 3\sqrt[3]{2 * 2^3} = 6\sqrt[3]{2}$

13. $\frac{3}{10 + \sqrt{5}} = \frac{3}{10 + \sqrt{5}} * \frac{10 - \sqrt{5}}{10 - \sqrt{5}} = \frac{3(10 - \sqrt{5})}{10^2 - (\sqrt{5})^2} = \frac{3(10 - \sqrt{5})}{95}$

14. $\frac{y - x}{\sqrt{y - \sqrt{x}}} = \frac{y - x}{\sqrt{y - \sqrt{x}}} * \frac{\sqrt{y + \sqrt{x}}}{\sqrt{y + \sqrt{x}}} = \frac{(y - x)(1 + \sqrt{x})}{(\sqrt{y})^2 - (\sqrt{x})^2} = \frac{(y - x)(1 + \sqrt{x})}{y - x} = 1 + \sqrt{x}$

Simplifying Radicals Assignment

Simplify radicals and recognize like or unlike radicals.

15. $2\sqrt{3}; 3\sqrt{2};$

UNLIKE RADICALS

17. $\sqrt[3]{250}; \sqrt[3]{54}; \sqrt[3]{16}$
 $\sqrt[3]{2 * 5^3}; \sqrt[3]{2 * 3^3}; \sqrt[3]{2 * 2^3}$
 $5\sqrt[3]{2}; 3\sqrt[3]{2}; 2\sqrt[3]{2}$

LIKE RADICALS

16. $3\sqrt{6}; \sqrt{24}$
 $3\sqrt{6}; \sqrt{2^2 * 6}$
 $3\sqrt{6}; 2\sqrt{6}$

LIKE RADICALS

18. $\sqrt[4]{2a^4b^9}; 6\sqrt[3]{2ab}; 3\sqrt[4]{2ab^5}$
 $\sqrt[4]{2a^4bb^4b^4}; 6\sqrt[4]{2ab}; 3\sqrt[4]{2abb^4}$
 $ab^2\sqrt[4]{2b}; 6\sqrt[4]{2ab}; 3b\sqrt[4]{2ab}$

UNLIKE RADICALS

Simplify the following expressions.

19. $(\sqrt[5]{-32})^2 = \sqrt[5]{(-2)^{5*2}} = \sqrt[5]{(-2)^{10}} =$
 $= (-2)^2 = 4$

20. $\sqrt[5]{\sqrt{xy^3}} = \sqrt[5*2]{xy^3} = \sqrt[10]{xy^3}$