

Algebra 2

Review sheet for test on exponents, fractions, and factoring

Textbook reference

6.1, 7.1, 7.2: Exponent properties

7.5: Graphs of square root functions

9.4, 9.5 Fractions with variables

Important note: The textbook does not cover all important problem types.

I. Simplify. Do all problems on a separate sheet of paper.

1. $(x^{2/3})^4 \cdot \sqrt[3]{x}$

2. $\sqrt{x^{4/3}}$

3. $x^{1/2} \cdot x \cdot x^2$

4. $(5^{-2} \cdot 1^{-1})^0 + 4$

5. $\left(\frac{27}{8}\right)^{-2/3}$

6. $\frac{(x-2)\sqrt{x-2}}{(x-2)^{-1/2}}$

7. $\frac{(x-7)^2(x-7)^5}{x^2-49}$

8. $(x^{-1} + (2x)^{-1})^{-1}$

9. $\frac{3}{x-4} - 2(x+4)^{-1}$

10. $\frac{x^2 + x - 6}{x^2 - 5x + 6}$

11. $\left(\frac{x^2 - 64}{x^2 + 9x + 8}\right)^{-1} \cdot \frac{1}{x+1}$

12. $\frac{x^3 + 3x^2 - 7x - 21}{x^4 - 81}$

13. $\frac{2x^3}{4x^2 + 6x}$

14. $(1^{1/2} - 64^{1/2})^2$

15. $\sqrt{6^2 + 8^2}$

16. $(x + x^{-1})^2$

17. $\frac{1}{(x+1)(x^2-1)} + \frac{1}{x^2+2x+1}$

II. Write true or false.

1. $\frac{(x-6)^3}{(x-6)^6} = \frac{1}{2}$

2. $\frac{x+5}{\sqrt{x+5}} = \sqrt{x+5}$

3. $x^{1/3} + x^{5/3} = x^2$

4. $\frac{x^{-1} + 3}{y^{-1} + 8} = \frac{y+3}{x+8}$

$$5. (3x)^{-1/2} = \frac{1}{\sqrt{3x}}$$

$$6. (2x^3)^4 = 2^4 \cdot x^{12}$$

$$7. x^{1/2}(x^{3/2} - x^{-1/2}) = x^2 - 1$$

$$8. \frac{x+4}{x+8} = \frac{1}{2}$$

$$9. \frac{1}{x^2} + \frac{3}{x} + 2 = \frac{1+3x+2x^2}{x^2}$$

$$10. \sqrt{x^{16}} = x^4$$

Answers

I. 1. x^3 2. $x^{2/3}$ 3. $x^{7/2}$ 4. 5 5. $\frac{4}{9}$ 6. $(x-2)^3$ or $x^2 - 4x + 4$ 7. $\frac{(x-7)^6}{x+7}$

8. $\frac{2x}{3}$ 9. $\frac{x+20}{(x+4)(x-4)}$ 10. $\frac{x+3}{x-3}$ 11. $\frac{1}{x-8}$ 12. $\frac{x^2-7}{(x-3)(x^2+9)}$

13. $\frac{x^2}{2x+3}$ 14. 49 15. 10 16. $x^2 + 2 + \frac{1}{x^2}$ or $\frac{x^4 + 2x^2 + 1}{x^2}$ 17. $\frac{x}{(x+1)^2(x-1)}$

II. 1. False 2. True 3. False 4. False 5. True 6. True 7. True 8. False
9. True 10. False