

Exam 2 Review

The following problems are a subset of the problems we've learned in Lessons 9 - 15. Of course, I recommend revisiting our in-class handouts to solve the problems therein more than once. No matter what resource you use, I encourage you to actively solve problems, find your mistakes, and correct your errors before the actual in class exam.

1 - 3 Simplify each of the following. State the values for which the expression is undefined.

1. $\frac{8x^2}{24x}$ 2. $\frac{6x + 12}{7x + 14}$ 3. $\frac{x^2 - 1}{x^2 + 3x + 2}$

4 - 11 Perform the indicated operation and simplify the result if possible.

4. $\frac{3}{x-1} + \frac{2}{(x-1)^2}$ 5. $\frac{10x + 20}{2x^2 - 3x + 1} \cdot \frac{x^2 - 1}{5x + 10}$

6. $(x + 2) \div \frac{x + 3}{x - 1}$ 7. $\frac{x}{x^2 + 5x + 6} - \frac{2}{x^2 + 3x + 2}$

8. $\frac{5x}{x-7} - \frac{3x}{7-x}$ 9. $\frac{2a}{a^2 - 1} + \frac{1}{a^2 + a}$

10. $\frac{a^2 + 3a + 2}{a^2 + 4} \div (5a^2 + 10a)$ 11. $\frac{x^2 - 2x - 3}{x^2 - 4} \cdot \frac{x + 5}{x + 1}$

12 - 13 Solve each of the following equations with rational expressions. As we discussed in class, please cultivate the habit of checking for extraneous solutions. If you solve the rational equations below using an algebraic technique, you may produce values for which at least one of the expression is undefined.

12. $1 + \frac{3}{x} = \frac{28}{x^2}$ 13. $\frac{36}{p^2 - 9} = \frac{2p}{p + 3} - 1$

14 - 16 Evaluate each of the following.

14. $\sqrt{(-3)^2}$

15. $\sqrt[3]{-8}$

16. $\sqrt[4]{-16}$

17 - 19 Use your calculator to approximate each of the following radical numbers. Round your answer to 4 decimal places.

17. $\sqrt{15}$

18. $\sqrt[3]{-19}$

19. $\sqrt[7]{-39}$

20 - 22 Simplify each of the following radical expression. Use absolute value notation when appropriate.

20. $\sqrt{25x^2}$

21. $\sqrt[3]{27x^3}$

22. $\sqrt[5]{32y^{10}x^7}$

23. Write the following using radical notation: $2x^{3/5}$

24. Write the following using rational exponents: $\sqrt[3]{x^5}$

25 - 27 Simplify each of the following.

25. $\sqrt[3]{\sqrt{x}}$

26. $y^{2/5}y^{3/5}$

27. $\left(\frac{\sqrt[3]{x^{-2}}}{\sqrt[4]{y^{-3}}}\right)^{12}$

28 - 30 Perform each of the indicated operations and simplify the result. Assume that the radicand was not formed by raising negative quantities to even powers.

28. $\frac{\sqrt{125p^3}}{\sqrt{5p}}$

29. $(3\sqrt{2x})(5\sqrt{6x^3})$

30. $(\sqrt{5} - 3\sqrt{2})(2\sqrt{5} - \sqrt{2})$

31 - 32 Solve each of the following equations with radical expressions.

31. $(w - 1)^{1/3} - 2 = 2$

32. $y + \sqrt{y - 2} = 8$