

Extra Practice for Ch. 10 & Ch. 11

1. Find the domain & simplify

$$\frac{2t^2 + 6t + 4}{4t^2 - 12t - 16}$$

2. Multiply. Simplify

$$\frac{a^4 - b^4}{2ab} \cdot \frac{2a^2 - ab - 3b^2}{a^2 + b^2}$$

3. Divide. Simplify

$$\frac{x^2 - x - 20}{x^2 + 7x + 12} \div \frac{x^3 - 10x^2 + 25x}{x^2 + 6x + 9}$$

4. Add. Simplify

$$\frac{z + 6}{z + 5} + \frac{3z^2 + 19z + 19}{z + 5}$$

5. Subtract. Simplify.

$$\frac{22x^2 - 4x - 2}{(5x + 2)(2x + 1)} - \frac{-8x^2 - 7x + 4}{(5x + 2)(2x + 1)}$$

6. Find the LCM of

$$2x^2 + 5x + 2 \text{ and } 2x^2 - x - 1$$

7. Add. Simplify.

$$\frac{x}{x^2 + 2x + 1} + \frac{1}{x^2 + 5x + 4}$$

8. List restrictions & solve.

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

9. List restrictions & solve.

$$x + \frac{3}{x} = -4$$

10. Show setup, an equation & solve.

A tank can be filled in 18 hours by Pipe A alone and in 24 hours by Pipe B alone. How many hours will it take to fill the tank using both Pipe A & B?

11. Show setup, an equation(s) & solve.

A solution containing 28% fungicide is to be mixed with one containing 40% fungicide to make 300L of a solution containing 36% fungicide. How much of each should be used?

12. Simplify by dividing.

$$\frac{25t^3 + 32t^2 - 30t}{5t^2}$$

13. Divide and check.

$$a + 2 \overline{) a^3 + 6a^2 + 12a + 8}$$

14. Simplify.

$$\frac{2}{y} + \frac{1}{2y}$$

$$y + \frac{y}{2}$$

15. Simplify.

$$\frac{2}{a + b}$$

16. Simplify.

$$-\sqrt{400}$$

17. Simplify. $x \in \mathbb{R}$

$$\sqrt{4x^2 - 4x + 1}$$

18. Simplify. $x > 0$. Don't approx..

$$3\sqrt{250x^3}$$

19. Simplify.

$$\sqrt[3]{m^3n}$$

20. Multiply. Simplify.

$$\sqrt{56x^2y^7} \cdot \sqrt{8xy}$$

21. Multiply. Simplify. $x > 0$

$$\sqrt{(x^2 + 25)^4} \cdot \sqrt{(x^2 + 25)^{99}}$$

22. Divide. Simplify. $y > 0$

$$\frac{\sqrt{27y^3}}{\sqrt{75y}}$$

23. Divide. Simplify. $x > 0$

$$\frac{\sqrt{30x^5}}{\sqrt{5x}}$$

24. Rationalize.

$$\frac{1}{\sqrt{12}}$$

25. Simplify. $x, y > 0$

$$\sqrt{\frac{6x}{2y^3}}$$

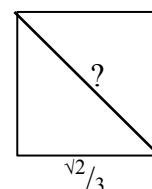
26. Subtract.

$$7\sqrt{5} - 3\sqrt{5}$$

27. Add/Subtract.

$$3\sqrt{48} - 2\sqrt{27} - 2\sqrt{18}$$

28. The following square has side length as shown. Find the length of the diagonal. Hint: Pythagorean Theorem.



29. The distance formula is an application of the Pythagorean Theorem (See p. 513). It gives the distance between two ordered pairs in the rectangular coordinate system. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ where (x_1, y_1) & (x_2, y_2) are ordered pairs. Find the distance between the points $(5, 6)$ & $(-2, 3)$.

30. Solve. Check your solution(s).

$$4 + \sqrt{y - 3} = 11$$

31. Solve & Graph. $|5x - 4| + 3 < -19$

32. Solve.

$$\begin{aligned} y + 3x &= 4 \\ 2x &= 5 - 6y \end{aligned}$$