CHAPTER 15 Test

1. Explain why $x = -3$ is an excluded value for $\frac{2x}{x+3}$. The denominator = 0 when $x = -3$

2. Identify and correct the error that was made while finding the difference.

$$\frac{4}{x+1} - \frac{x-3}{x+1} = \frac{4-x-3}{x+1}$$
$$= \frac{1-x}{x+1}$$

The numerator should be $4-(x-3)$ or $4-x+3$

3. Find the least common denominator of $\frac{5}{6a}$ and $\frac{2}{3a^2}$. $6A^2$

Find the excluded value(s) for each rational expression.

4. $\frac{8}{x}$ $x \neq 0$

5. $\frac{6m}{m(m-2)}$ $m \neq 0, 2$

6. $\frac{2n}{n^2-9}$ $n \neq -3, 3$

Simplify each expression.

7. $\frac{9a^3b^2}{15ab^5}$ $\frac{3A^2}{5B^2}$

8. $\frac{x^3-x^2}{x-1}$ x^2

9. $\frac{x-2}{x^2-5x+6}$ $\frac{1}{x-3}$

Find each sum, difference, product, or quotient. Write in simplest form.

10. $\frac{z^3}{8} \cdot \frac{10x^2}{z^3}$ $\frac{5x^2}{4}$

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

12. $\frac{x^2-x-2}{x^2-4} \cdot \frac{x+2}{x^2+4x+3}$ $\frac{1}{x+3}$

13. $\frac{4a+4b}{a} \div \frac{10a+10b}{a^2}$ $\frac{2A}{5}$

14. $\frac{5}{8x} + \frac{11}{8x}$ $\frac{2}{x}$

15. $\frac{t}{t+5} - \frac{t-6}{t+5}$ $\frac{6}{t+5}$

16. $\frac{6}{5y} + \frac{7}{10y^2}$ $\frac{12y+7}{10y^2}$

17. $\frac{2}{x+4} - \frac{x}{x^2-16}$ $\frac{x-8}{(x+4)(x-4)}$

Find each quotient.

18. $(y^2 + 10y + 16) \div (y + 2)$ $y+8$

19. $(x^3 + x^2 - x - 1) \div (x - 1)$ x^2+2x+1

20. $(a^2 - 10) \div (a + 3)$ $A-3-\frac{1}{A+3}$

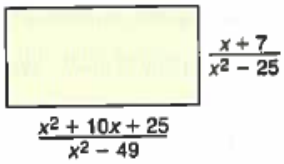
21. $(x^2 - 5x + 8) \div (x - 2)$ $x-3+\frac{2}{x-2}$

Solve each equation. Check your solution.

22. $\frac{n+2}{3} + \frac{n}{2} = \frac{1}{2}$ $n = -\frac{1}{5}$

23. $\frac{5}{x+2} - \frac{1}{4x+8} = \frac{1}{4}$ $x = 17$

24. **Geometry** Find the measure of the area of the rectangle in simplest form.



$\frac{x+5}{x^2-12x+35}$

25. **Transportation** A tugboat pushing a barge up the Mississippi River takes 1 hour longer to travel 36 miles up the river than to travel the same distance down the river. If the rate of the current is 3 miles per hour, find the speed of the tugboat and barge in still water. 15mph