Chapter Test

Simplify. Give the restrictions on the variable.

1. $\dfrac{5x + 35}{x^2 - 49}$ $\dfrac{5}{x-7}; x \ne 7, x \ne -7$

2. $\dfrac{64 - n^2}{n^2 - 4n - 32}$ $-\dfrac{n+8}{n+4}; n \ne 8, n \ne -4$

3. $\dfrac{3x^2 - 6x - 24}{3x^2 + 2x - 8}$ $\dfrac{3(x-4)}{3x-4}; x \ne \dfrac{4}{3}; x \ne -2$

4. $\dfrac{15y^2 - 30y - 45}{5y^2 + 10y - 15}$ $\dfrac{3(y-3)(y+1)}{(y+3)(y-1)}; y \ne -3, y \ne 1$

Express in simplest form.

5. $\left(-\dfrac{n^3}{7}\right)^2$ $\dfrac{n^6}{49}$

6. $\dfrac{(3b)^2}{5} \cdot \dfrac{b^3}{5}$ $\dfrac{9b^5}{25}$

7. $\left(\dfrac{3a}{b}\right)^2 \cdot \dfrac{7ab}{54}$ $\dfrac{7a^3}{6b}$

8. $\dfrac{9}{11} \div \dfrac{11}{9}$ $\dfrac{81}{121}$

9. $\dfrac{4}{7} \div \dfrac{4}{7}$ 1

10. $\dfrac{5x^2}{4y^2} \div 20xy$ $\dfrac{x}{16y^3}$

11. $18 \div \left(\dfrac{3n}{2}\right)^3$ $\dfrac{16}{3n^3}$

12. $\dfrac{6a + 36}{6a} \div \dfrac{a^2 - 36}{a^2}$ $\dfrac{a}{a-6}$

13. $\dfrac{y}{2x^3} \div \left(\dfrac{y}{2x}\right)^2$ $\dfrac{2}{xy}$

Complete.

14. $\dfrac{7n}{16m} = \dfrac{?}{32m^2n}$ $14mn^2$

15. $\dfrac{3}{x+5} = \dfrac{?}{x^2 - 25}$ $3(x-5)$

Rewrite each group of fractions with their LCD.

16. $\dfrac{3}{8x}, \dfrac{5}{12y^2}, \dfrac{5}{6x^2y}$ $\dfrac{9xy^2}{24x^2y^2}, \dfrac{10x^2}{24x^2y^2}, \dfrac{20y}{24x^2y^2}$

17. $\dfrac{x-4}{15}, \dfrac{x+2}{10}$ $\dfrac{2(x-4)}{30}, \dfrac{3(x+2)}{30}$

Simplify.

18. $\dfrac{x}{x-9} + \dfrac{1}{x-9} - \dfrac{19-x}{x-9}$ 2

19. $\dfrac{x-1}{3} + \dfrac{3-2x}{6}$ $\dfrac{1}{6}$

20. $\dfrac{6n+3}{n-5} - \dfrac{4n+9}{5-n}$ $\dfrac{2(5n+6)}{n-5}$

21. $\dfrac{2}{y^2 - 2y} - \dfrac{3}{y^2 - y - 2}$ $-\dfrac{1}{y(y+1)}$

Write each expression as a fraction in simplest form.

22. $12 - \dfrac{n}{5}$ $\dfrac{60-n}{5}$

23. $2 + \dfrac{6}{y-7}$ $\dfrac{2(y-4)}{y-7}$

24. $4x - \dfrac{x+1}{x-1}$ $\dfrac{4x^2 - 5x - 1}{x-1}$

25. $\dfrac{x}{x+2} + \dfrac{2}{x-2} + 1$ $\dfrac{2x^2}{(x+2)(x-2)}$

Divide. Write the answer as a polynomial or a mixed expression.

26. $\dfrac{45 - 13n + n^2}{n - 5}$ $n - 8 + \dfrac{5}{n-5}$

27. $\dfrac{2x^3 - x^2 - 5x - 2}{2x + 1}$ $x^2 - x - 2$