

**Unit 5 Test Review**

Write the **common denominator** in factored form.

1.  $\frac{4}{x-1} - \frac{10}{x+2}$

2.  $\frac{5x}{2x+6} + \frac{3}{x+3}$

3.  $\frac{2}{4x^2+12x} + \frac{5x}{x^2+x-6}$

Simplify the following expressions. **Do the operation that is asked.** Do NOT multiply answers, leave them in factored form.

4.  $\frac{(3x-2)(x+5)}{3x-2}$

5.  $\frac{8x}{x-2} - \frac{16}{x-2}$

6.  $\frac{x^2+5x}{x^2-49} + \frac{5x+21}{x^2-49}$

7.  $\frac{5}{x-2} - \frac{4}{x-3}$

$$8. \frac{(x+5)(x-2)}{(4x-1)(x-2)} \cdot \frac{4(4x-1)}{x(x+5)}$$

$$9. \frac{x+2}{x^2+6x+8}$$

$$10. \frac{x^2+8x-20}{x^2+6x-40} \div \frac{x^2-x}{x-1}$$

$$11. \frac{12x}{-4x-8} \cdot \frac{x^2+5x+6}{x^2+3x}$$

$$12. \frac{x^2+6x+9}{x+3} \div \frac{2x+6}{x^2-9}$$

$$13. \frac{10}{4(x+3)} + \frac{4}{-2(x+3)}$$

$$14. \frac{x+1}{x^2+5x+4} + \frac{2}{x^2-16}$$

$$15. \frac{6x(2x-3)}{(x-8)(x+3)} \div \frac{(2x-3)(2x+3)}{(2x+3)(x-8)}$$

$$16. \frac{x^3 - 64}{x^3 + 64} \div \frac{x^2 - 16}{x^2 - 4x + 16}$$

Solve each of the following functions for  $x$ . State the restrictions if there are any. Leave answers as simplified fractions or simplified radicals. Show work!

$$17. \frac{14}{(x-5)(x+5)} - \frac{4}{x+5} = \frac{2}{x-5}$$

$$18. \frac{7x-2}{x+10} = 1$$

$$19. \frac{x^2 - 35}{x^2 - 3x} = \frac{1}{x^2 - 3x}$$

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

$$21. \frac{7x}{x+6} = 6 - \frac{42}{x+6}$$

$$22. \frac{12}{x^2 - x - 12} = \frac{3}{x-4} + \frac{6}{x+3}$$