NAME _____ DATE _____ PERIOD _____

5-4 Study Guide and Intervention

Factoring Polynomials

Simplify Quotients In the last lesson you learned how to simplify the quotient of two polynomials by using long division or synthetic division. Some quotients can be simplified by using factoring.

Example **Simplify** $\frac{8x^2 + 11x + 12}{2x^2 - 13x - 24}$.

$$\frac{8x^2 + 11x + 12}{2x^2 - 13x - 24} = \frac{(2x + 3)(x + 4)}{(x - 8)(2x + 3)}$$ Factor the numerator and denominator.

$$= \frac{x + 4}{x - 8}$$ Divide. Assume $x \neq 8, -\frac{3}{2}$.

Exercises Act. #77

Simplify. Assume that no denominator is equal to 0.

1. $\frac{x^2 - 7x + 12}{x^2 - x - 6}$

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

3. $\frac{x^2 - 11x + 30}{x^2 - 5x - 6}$

4. $\frac{x^2 + x - 6}{x^2 - 7x + 10}$

5. $\frac{2x^2 + 5x - 3}{4x^2 + 11x - 3}$

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

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

8. $\frac{6x^2 + 25x + 4}{x^2 + 6x + 8}$

9. $\frac{x^2 - 7x + 10}{3x^2 - 8x - 35}$

10. $\frac{4x^2 + 16x + 15}{2x^2 + x - 3}$

11. $\frac{3x^2 + 4x - 15}{2x^2 + 3x - 9}$

12. $\frac{x^2 - 14x + 49}{x^2 - 2x - 35}$

13. $\frac{x^2 - 81}{2x^2 - 23x + 45}$

14. $\frac{7x^2 + 11x - 6}{x^2 - 4}$

15. $\frac{4x^2 - 12x + 9}{2x^2 + 13x - 24}$

16. $\frac{4x^2 - 4x - 3}{8x^2 - 8x - 24}$

17. $\frac{3y^2 - 75}{3y^2 - 17y + 20}$

18. $\frac{6x^2 - 4x}{9x^2 - 4}$

19. $\frac{8y^2 + 33y + 4}{64y^2 - 1}$

20. $\frac{x^4 - 36x^2}{x^3 + 7x^2 + 6x}$

21. $\frac{m^2 - 289}{m^3 - 15m^2 - 34m}$