Review Unit 8 Retake

Name Key Date

LESSON 8.3

Practice B

For use with pages 565–571

* Do circled problems only on a separate sheet of paper

Identify the x-intercept(s) and vertical asymptote(s) of the graph of the function.

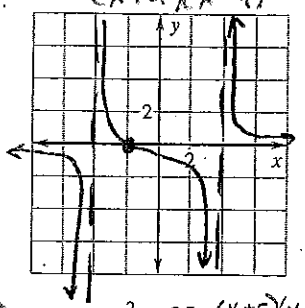
1. $y = \dfrac{x^2 + 2x - 15}{x^2 - 36}$

2. $y = \dfrac{x^2 - 2x + 1}{x^2 - 2}$

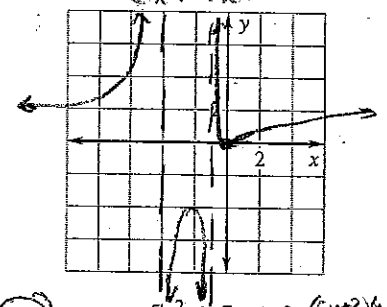
3. $y = \dfrac{2x - 1}{x^2 + 7}$

Graph the function.

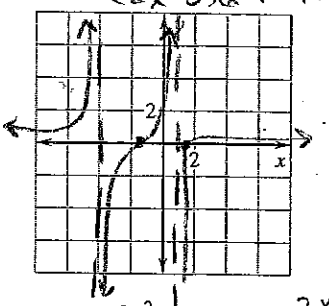
4. $f(x) = \dfrac{2x + 4}{x^2 - 16}$ $2(x+2)$ $(x+4)(x-4)$



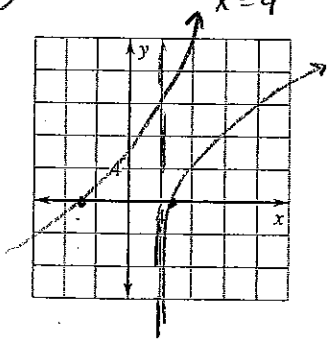
5. $f(x) = \dfrac{2x^2}{x^2 + 5x + 4}$ $x = 0$ $(x+4)(x+1)$



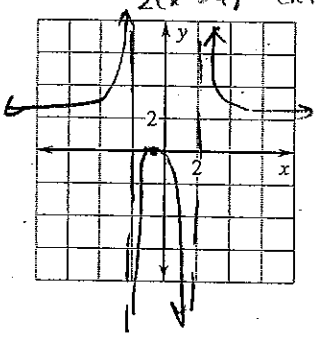
6. $f(x) = \dfrac{x^2 - 3}{2x^2 + 5x - 12}$ $x^2 - 3 = 0$ $x^2 = 3$ $x = \pm\sqrt{3}$ $(2x-3)(x+4)$ $x = -4$ $x = 3/2$



7. $f(x) = \dfrac{x^2 - 25}{x - 4}$ $(x+5)(x-5)$ $x = 4$

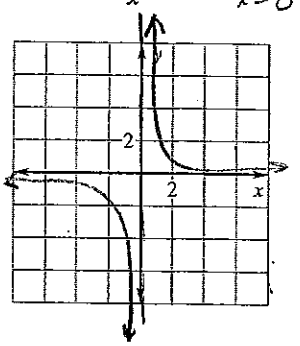


8. $f(x) = \dfrac{5x^2 + 7x + 2}{2x^2 - 8}$ $(5x+2)(x+1)$ $2(x^2-4)$ $(x+2)(x-2)$



9. $f(x) = \dfrac{2x^2 + 3}{x^3}$ $x = 0$ $2x^2 + 3 = 0$ $2x^2 = -3$ $x^2 = -\frac{3}{2}$ $x = \pm\sqrt{-3/2}$

Imaginary
no x-intercept



LESSON 8.4

Simplify the rational expression, if possible.

1. $\dfrac{3x - 3}{6}$

2. $\dfrac{(x + 7)(x + 9)}{(x - 9)(x + 7)}$

3. $\dfrac{x + 2}{x^2 - 4x + 4}$

4. $\dfrac{x^2 + 4x - 5}{x^2 - 25}$ $\dfrac{x-1}{x-5}$

5. $\dfrac{x^2 + 4x}{x^2 - 2x - 24}$ $\dfrac{x}{x-6}$

6. $\dfrac{x^2 + 10x - 11}{x^2 + 7x - 8}$ $\dfrac{x+11}{x+8}$

Multiply the expressions. Simplify the result.

7. $\dfrac{6x^3y}{xy^2} \cdot \dfrac{3x^2y}{8x^3}$

8. $\dfrac{44x^7y^4}{5xy^2} \cdot \dfrac{12xy^5}{22x^5y^3}$ $\dfrac{24x^2y^4}{5}$

9. $\dfrac{5x(x - 2)}{(x + 1)(x - 6)} \cdot \dfrac{(x + 1)}{10(x - 2)(x - 1)}$

10. $\dfrac{x^2 + 4x + 3}{x^2 + 5x + 6} \cdot \dfrac{x^2 - 3x - 10}{x^2 + x}$ $\dfrac{x-5}{x}$

11. $\dfrac{x^2 - 9x + 20}{x^2 + 9x + 14} \cdot \dfrac{x^2 + 6x + 8}{x^2 - x - 20}$

12. $\dfrac{x^3 - 9x}{x^2 + 6x + 9} \cdot \dfrac{x^3 + 3x^2}{x - 3}$ x^3

Divide the expressions. Simplify the result.

13. $\frac{10x^4}{3xy^2} \div \frac{6x^2y}{xy^4}$

14. $\frac{16x^2y}{81xy^2} \div \frac{24x^2y}{54x^3y^3}$ $\frac{4x^2y}{9}$

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

16. $\frac{9x^2}{6x-3} \div \frac{3x^2-12x}{2x^2-x}$ $\frac{x^2}{x-4}$

17. $(x^2+9x+18) \div \frac{x^2-3x-18}{x^2-9x+18}$

18. $\frac{3x^2+4x+1}{x^2-4} \div \frac{x+1}{x^2+8x+12}$ $\frac{(3x+1)(x+6)}{x-2}$

Perform the indicated operation and simplify.

5. $\frac{2}{3x+1} + \frac{x}{3x+1}$

6. $\frac{x}{x^2-4x+3} + \frac{5}{x-3}$ $\frac{6x-5}{(x-3)(x-1)}$

7. $\frac{3x}{x-5} - \frac{2}{x^2-25}$

8. $\frac{3}{x} + \frac{2}{x-2} - \frac{2}{x^2}$ $\frac{5x^2-8x+4}{x^2(x-2)}$

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

10. $\frac{2x}{x^2+4x+4} + \frac{x-1}{x(x+2)}$ $\frac{3x^2+x-2}{x(x+2)^2}$

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

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

Simplify the complex fraction.

13. $\frac{\frac{2}{x}+\frac{3}{x-1}}{\frac{1}{2x-2}}$

$\frac{10x-4}{x}$

14. $\frac{\frac{3}{x+2}+\frac{2}{3}}{\frac{2x}{x+2}-\frac{1}{x}}$

$\frac{2x^2+13x}{6x^2-3x-6}$

15. $\frac{\frac{3x}{2x-1}-2}{\frac{5}{4x}-\frac{x}{2x-1}}$

$\frac{-4x^2+8x}{4x^2+10x-5}$

Solve the equation by cross multiplying. Check for extraneous solutions.

3. $2 = \frac{x+2}{x-3}$

4. $\frac{1}{x+5} = \frac{2}{7x}$

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

6. $\frac{2x+4}{5x} = \frac{2}{x}$

7. $\frac{x+1}{x-2} = \frac{x-3}{x}$

8. $\frac{2x+3}{3x} = \frac{x}{2x-3}$ $x = -3, 3$

9. $\frac{x-5}{-3} = \frac{4}{x+2}$

10. $\frac{2x-6}{x-6} = \frac{x}{x+2}$ $x = -6, 2$

Solve the equation by using the LCD. Check for extraneous solutions.

11. $\frac{3}{2} + \frac{1}{x} = 1 + \frac{4}{x}$

12. $\frac{-x+1}{x-1} + 2 = \frac{1}{x}$ No solution

13. $1 + \frac{6}{x} = \frac{2x-4}{x} - 3$

14. $\frac{6}{x-3} - 4 = \frac{2}{x-3}$ $x = 4$

15. $\frac{4}{x-3} + \frac{2}{x+3} = \frac{2x+2}{x^2-9}$ $x = -1$

16. $\frac{x^2}{3x-1} + 2 = \frac{2(x-3)}{3x-1}$ $x = -2$

17. $\frac{x}{2x-1} - \frac{2}{2x+1} = \frac{x^2+20}{4x^2-1}$

$x = -3, x = 6$

18. $x + \frac{5}{x+6} = \frac{6x-1}{x+6}$