UNIT 3 • RATIONAL AND RADICAL RELATIONSHIPS
Lesson 1: Operating with Rational Expressions

Pre-Assessment — *Review*

Circle the letter of the best answer.

1. Which simplified rational expression is equivalent to $\dfrac{7}{5x}+\dfrac{4}{3x}$?

   a. $\dfrac{41}{15x}$

   b. $\dfrac{41x}{15}$

   c. $\dfrac{11}{8x}$

   d. $\dfrac{11}{15x}$

2. Which simplified rational expression is equivalent to $\dfrac{x+1}{2x}+5x$?

   a. $\dfrac{5x^2+x+1}{2}$

   b. $\dfrac{10x^2+x+1}{2x}$

   c. $5x+1$

   d. $\dfrac{6x+1}{2x}$

3. Which simplified rational expression is equivalent to $\dfrac{2x^2+4x-6}{x+3}\cdot\dfrac{5+2x}{x-1}$?

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

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

   c. $4x+10$

   d. $\dfrac{4x^3+18x^2+8x-30}{x^2+2x-3}$

4. Which simplified rational expression is equivalent to $\dfrac{x^2+1}{x-1}-\dfrac{x-6}{x+2}$?

   a. $\dfrac{10x-5}{x^2+x-2}$

   b. $\dfrac{x^3+2x^2-6x+8}{x^2+x-2}$

   c. $\dfrac{x^3+x^2+8x-4}{x^2+x-2}$

   d. $\dfrac{x^2+x-7}{x^2+x-2}$

5. Which simplified rational expression is equivalent to $\dfrac{2x^2+13x+15}{x+5}\div\dfrac{2x+3}{3x-1}$?

   a. $3x-1$

   b. $6x^2+7x-3$

   c. $\dfrac{4x^3+32x^2+57x+27}{3x^2-14x-5}$

   d. $\dfrac{4x^2+12x+9}{3x-1}$

UNIT 3 • RATIONAL AND RADICAL RELATIONSHIPS
Lesson 2: Solving Rational and Radical Equations

Pre-Assessment

Circle the letter of the best answer.

1. What is the solution to the equation $\dfrac{1}{8} - \dfrac{3}{4x} = \dfrac{1}{x}$?

   a. $x = -2$ c. $x = 2$

   b. $x = 1$ d. $x = 14$

2. What is the solution to the equation $\dfrac{4x+2}{x-2} + \dfrac{9}{4x} = -1$?

   a. $x = \dfrac{4}{3}$ c. $x = -\dfrac{3}{4}$

   b. $x = \dfrac{3}{4}$ d. $x = -\dfrac{4}{3}$

3. What is the solution to the equation $\sqrt{x} + 3 = 12$?

   a. $x = 3$ c. $x = 9$

   b. $x = 141$ d. $x = 81$

4. What is the solution to the equation $\sqrt{x+3} + \sqrt{x} = 3$?

   a. $x = 9$ c. $x = 1$

   b. $x = 3$ d. The equation has no real solution.

5. What is the solution to the rational inequality $\dfrac{5+3x-2x^2}{x+1} \geq -1$?

   a. $x < 1$ c. $x < 3$

   b. $x > 3$ d. $x \leq 3$

UNIT 3 • RATIONAL AND RADICAL RELATIONSHIPS
Lesson 3: Graphing Rational Functions

Pre-Assessment

Circle the letter of the best answer. *vertical Asymptote*
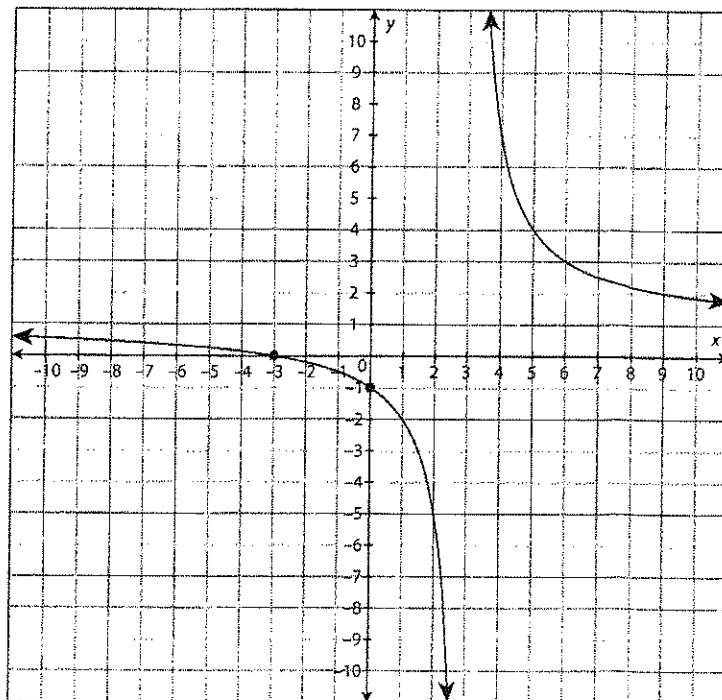
1. Which choice best describes $y = \dfrac{x+3}{x-3}$?

    a. $X = 3$

    b. $X = -3$

    c. $X = 1$

    d. none

2. At what value of x is the function graphed below undefined?

    a. $x = -3$

    b. $x = -1$

    c. $x = 0$

    d. $x = 3$

UNIT 3 • RATIONAL AND RADICAL RELATIONSHIPS
Lesson 3: Graphing Rational Functions

Assessment

3. At what value(s) of x is the function described by the following data undefined?

x	-2	-1	0	1	2
y	2	—	0	$\dfrac{1}{2}$	$\dfrac{2}{3}$

   a. $x = -1$ and $x = 0$

   b. $x = -1$

   c. $x = 0$

   d. The function is defined for all values of x.

is the horizontal Asumptote

4. What _____ of the function $f(x) = \dfrac{x(x+1)}{(x+2)(x+3)}$?

   a. _____ $y = 0$

   b. _____ $y = 1$

   c. _____ *None*

   d. _____ $y = 2$

5. Which is a system of two rational equations?

   a. $\begin{cases} y = 2x \\ x = \dfrac{2}{y} \end{cases}$

   b. $\begin{cases} y = 3x^2 \\ y = 2x + 3 \end{cases}$

   c. $\begin{cases} x = 1 \\ y = \dfrac{1}{x} \end{cases}$

   d. $\begin{cases} y = \dfrac{x-2}{x+1} \\ \dfrac{y-1}{y+2} = x \end{cases}$