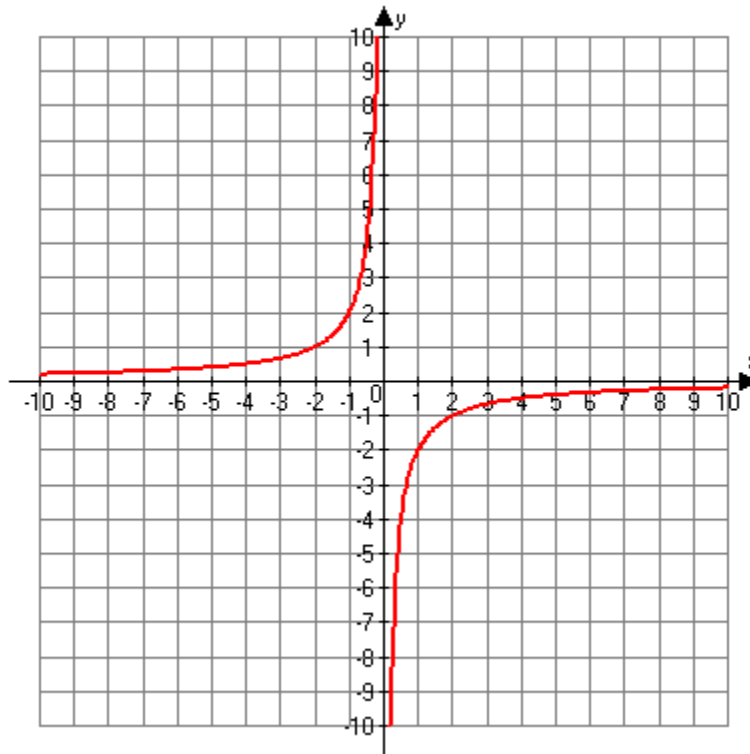**Algebra 2**
Unit: Rational Functions
Section: Graphing Rational Functions and Domain and Range

**Multiple Choice: Transformations of Rational Functions**

Directions: Choose the correct function for each graph.

1. Curve through the points (negative 2, 1), (negative 1, 2), (1, negative 2) (2, negative 1) and is not defined for x equals 0 and y equals 0.
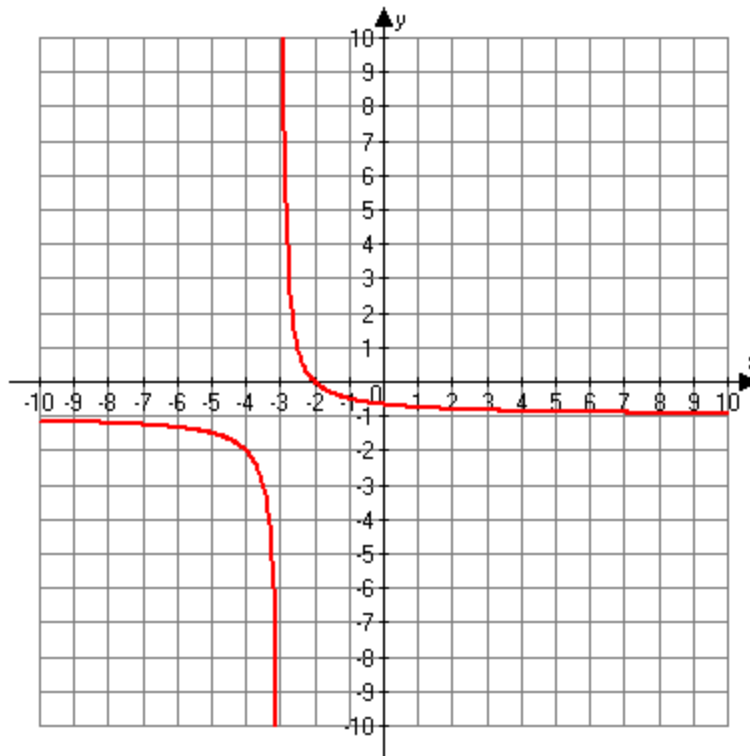

A. $f(x) = -\dfrac{1}{x}$

B. $f(x) = -\dfrac{2}{x}$

C. $f(x) = \dfrac{2}{x}$

D. $f(x) = \dfrac{1}{x}$

2. Curve through the points (3, negative one-half), (4, negative 1), (6, 1) (7, one-half) and is not defined for x equals 5 and y equals 0.
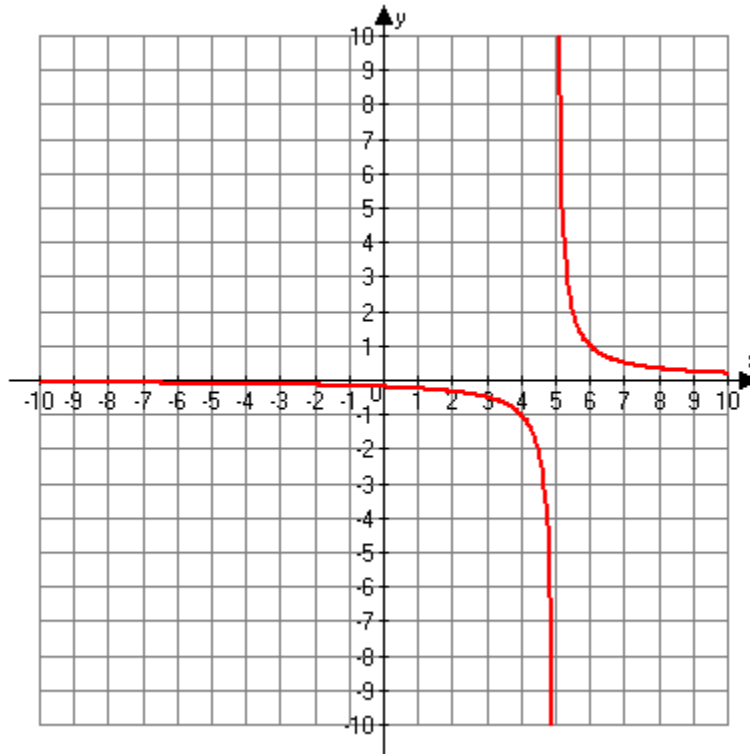
A. $f(x) = \dfrac{1}{x+5}$

B. $f(x) = -\dfrac{1}{x-5}$

C. $f(x) = \dfrac{1}{x} + 5$

D. $f(x) = \dfrac{1}{x-5}$

3. Curve through the points (negative 5, negative 1 and one-half), (negative 4, negative 2), (negative 2, 0) (negative 1, negative one-half) and is not defined for x equals negative 3 and y equals negative 1.
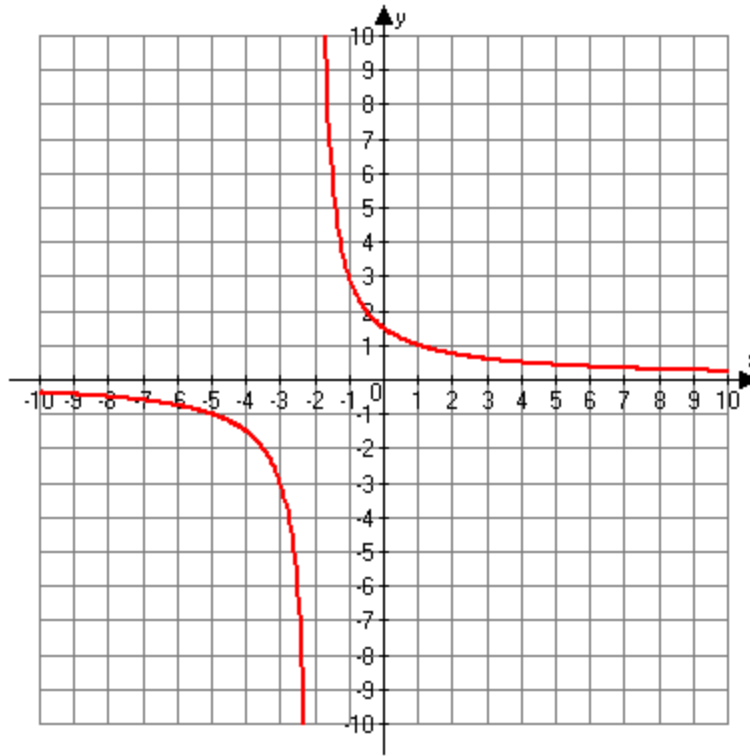

A. $f(x) = \dfrac{1}{x+3} - 1$

B. $f(x) = \dfrac{1}{x+3} + 1$

C. $f(x) = \dfrac{1}{x-3} - 1$

D. $f(x) = \dfrac{1}{x-3} + 1$

4. Curve through the points (negative 5, negative 1), (negative 4, negative 1 and one-half), (negative 1, 3) (0, 1 and one-half) and is not defined for x equals negative 2 and y equals 0.
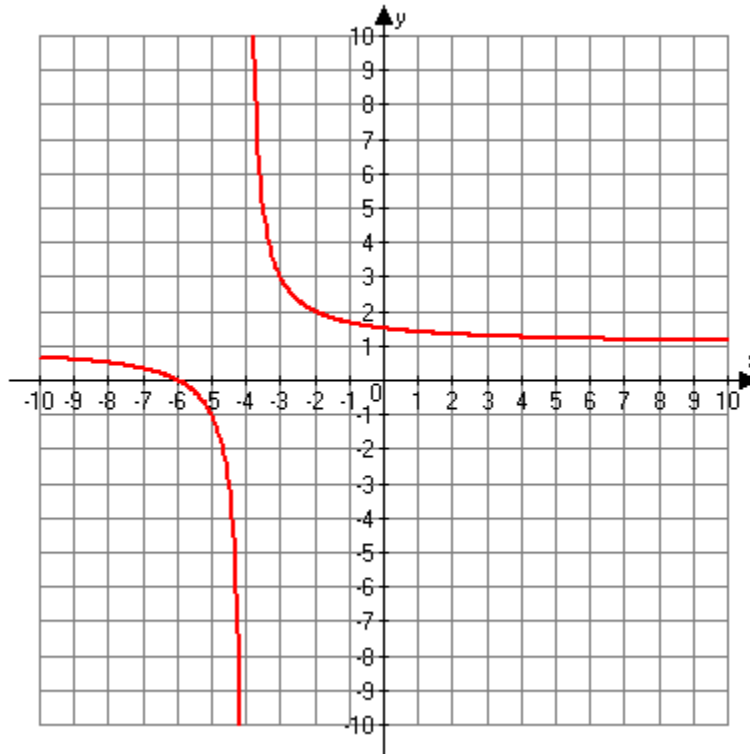

A. $f(x) = \dfrac{2}{x+2}$

B. $f(x) = \dfrac{3}{x-3}$

C. $f(x) = \dfrac{3}{x+2}$

D. $f(x) = -\dfrac{3}{x+2}$

5. Curve through the points (negative 6, 0), (negative 5, negative 1), (negative 3, 3) (negative 2, 2) and is not defined for x equals negative 4 and y equals 1.

A. $f(x) = -\dfrac{2}{x+4} + 1$

B. $f(x) = \dfrac{2}{x+4} + 1$

C. $f(x) = \dfrac{2}{x-4} + 1$

D. $f(x) = \dfrac{2}{x+4} - 1$

Answers: Correct answers are marked with an asterisk. Incorrect answers have hints for what mistake you may have made.

1.   A. $f(x) = -\dfrac{1}{x}$

The graph still needs to be stretched by a factor of 2.

*B. $f(x) = -\dfrac{2}{x}$

The graph is reflected across the x-axis and stretched by a factor of 2.

C. $f(x) = \dfrac{2}{x}$

The graph still needs to be reflected across the x-axis.

D. $f(x) = \dfrac{1}{x}$

The graph needs to be stretched by a factor of 2 and reflected across the x-axis.

2.   A. $f(x) = \dfrac{1}{x+5}$

The graph needs to move to the right, not the left.

B. $f(x) = -\dfrac{1}{x-5}$

The graph is not reflected across the x-axis.

C. $f(x) = \dfrac{1}{x} + 5$

The graph moves 5 units to the right not 5 units up.

*D. $f(x) = \dfrac{1}{x-5}$

The graph is moved 5 units to the right.

3.   *A. $f(x) = \dfrac{1}{x+3} - 1$

The graph moves 3 units to the left and 1 unit down.

B. $f(x) = \dfrac{1}{x+3} + 1$

The graph moves 1 unit down not 1 unit up.

C. $f(x) = \dfrac{1}{x-3} - 1$

The graph moves 3 units to the left not 3 units to the right.

D. $f(x) = \dfrac{1}{x-3} + 1$

The graph moves 3 units left not right, and 1 unit down not up.

4.   A. $f(x) = \dfrac{2}{x+2}$

The graph is stretched by a factor of 3 not 2.

B. $f(x) = \dfrac{3}{x-3}$

The graph moves 2 units to the left not 3 units to the right.

*C. $f(x) = \dfrac{3}{x+2}$

The graph is stretched by a factor of 3 and moves 2 units to the left.

D. $f(x) = -\dfrac{3}{x+2}$

The graph is not reflected across the x-axis.

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

The graph is not reflected across the x-axis.

*B. $f(x) = \dfrac{2}{x+4} + 1$

The graph moves 4 units to the left, 1 unit up and is stretched by a factor of 2.

C. $f(x) = \dfrac{2}{x-4} + 1$

The graph moves 4 units to the left not 4 units to the right.

D. $f(x) = \dfrac{2}{x+4} - 1$

The graph moves 1 unit up not 1 unit down.