

Algebra II  
Test Review Unit 11

Name \_\_\_\_\_

Date \_\_\_\_\_

Test Review: Rational Expressions and Equations. Your test will also consist of graphing Rational equations.

1. Simplify:  $\left(\frac{-5x}{3y}\right)\left(\frac{39x^2y^3}{15xy}\right)$

a)  $-\frac{39x^2y}{3}$

b)  $-\frac{13x^2y}{3}$

c)  $\frac{13x^2y^2}{3}$

d)  $\frac{13x^3y^3}{3}$

2. Simplify the expression  $\frac{9}{x^2-16} \cdot \frac{4-x}{21}$ .

a)  $-\frac{3}{7x-28}$

b)  $-\frac{3}{7x+28}$

c)  $\frac{1}{x+4}$

d)  $\frac{2}{7x+28}$

3. Simplify:  $\frac{m^2-7m+12}{m^2-m-6} \cdot \frac{m^2+7m+10}{m^2+m-20}$

a) 0

b) 1

c)  $\frac{1}{m+5}$

d)  $\frac{m+5}{m-4}$

4. Simplify:  $\frac{10a+8-3a^2}{a^2-a-12} \cdot \frac{9a^3-81a}{3a^2-7a-6}$

a)  $-\frac{3a+2}{a-4}$

b)  $-\frac{3}{a}$

c)  $-9a$

d)  $18a^2$

5. Simplify:  $4abc \div \frac{2a^2b}{3d^2}$

a)  $\frac{6cd}{a}$

b)  $\frac{6cd^2}{a}$

c)  $\frac{12cd^2}{a}$

d)  $\frac{12acd^2}{2a^2}$

6. Simplify the expression  $\frac{x^2-xy}{cx^2-cy^2} \div \frac{x^3-x^2}{cx^2-cx}$ .

a)  $\frac{1}{x+y}$

b)  $\frac{x}{x+y}$

c)  $\frac{x}{x^2+y}$

d)  $x+y$

7. Find the quotient  $\frac{\frac{2}{3} + \frac{5}{9}}{\frac{1}{4} + \frac{1}{12}}$ , and express in lowest terms.
- a)  $\frac{1}{3}$       b)  $\frac{4}{3}$       c)  $\frac{8}{3}$       d)  $\frac{11}{3}$
8. Simplify the expression  $\frac{\frac{m^3 p^4}{5m}}{\frac{8mp^5}{p^2}}$ .
- a)  $\frac{p}{40}$       b)  $\frac{m}{40}$       c)  $\frac{mp}{40}$       d)  $\frac{m^2 p}{50}$
9. Find the expression that is equivalent to  $\frac{-1}{x^2} + \frac{3}{xy}$ .
- a)  $\frac{-y + 3x}{xy}$       b)  $\frac{-y + 3x}{x^2 y}$
- c)  $\frac{2}{x^2 + xy}$       d)  $\frac{-y + 3x^2}{x^2 y^2}$
10. Simplify:  $\frac{1}{m^2 - 9} + \frac{1}{3m + 9}$
- a)  $\frac{m}{3(m + 3)}$       b)  $\frac{2m}{3(m - 3)}$
- c)  $\frac{2}{m^2 + 3m}$       d)  $\frac{m}{3(m + 3)(m - 3)}$
11. Simplify the expression  $\frac{9}{8 - y} + \frac{6}{y - 8}$ .
- a)  $-\frac{3}{y - 8}$       b)  $-\frac{15}{y - 8}$       c)  $\frac{5}{8 - y}$       d)  $\frac{15}{16}$
12. Simplify:  $\frac{-1}{7z} + \frac{3}{z + 2} + \frac{4}{7z(z + 2)}$
- a)  $\frac{10z + 1}{7z(z + 2)}$       b)  $\frac{20z + 2}{7z(z + 2)}$
- c)  $\frac{20z + 2}{7z^2(z + 2)}$       d)  $\frac{20z^2 + 2}{7z(z^2 + 2)}$

13. Simplify:  $\frac{6}{y^2} - \frac{2}{y}$

a)  $\frac{8}{y^3}$

b)  $\frac{6-2y}{y^2}$

c)  $\frac{9-2y}{y^2-y}$

d)  $\frac{16-3y}{y^3}$

14. Find the difference  $\frac{2x}{x+y} - \frac{3x}{2x+2y}$ , and express in lowest terms.

a)  $-\frac{x}{x+y}$

b)  $\frac{x}{2(x+y)}$

c)  $\frac{x}{2(x^2+y^2)}$

d)  $\frac{x^2}{2(x^2+y^2)}$

Solve.

15.  $\frac{2}{y+5} = \frac{7}{y}$

16.  $\frac{5h-2}{h+2} = \frac{5h-4}{h+4}$

17.  $\frac{r-3}{3r} - \frac{5}{12} + \frac{1}{r} = \frac{6-r}{6r}$

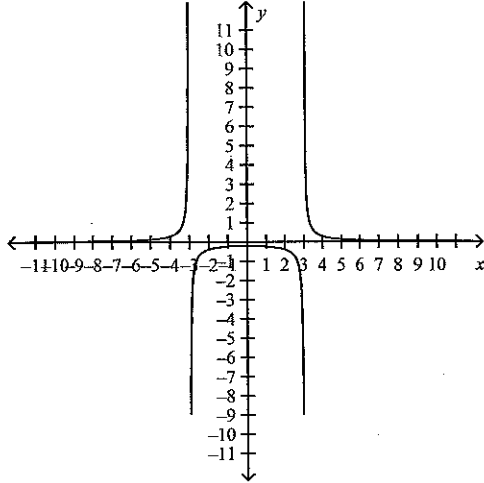
18.  $\frac{4}{v-4} + \frac{v}{4-v} - 2 = 0$

19.  $\frac{18}{n^2-9} + 1 = \frac{n}{n+3}$

## Test Review Unit 11

## Short Answer

1. State the horizontal and vertical asymptotes, domain, and range of the graph below.



2. State the vertical asymptote(s) for each rational function.

a)  $f(x) = \frac{3}{x+5}$

b)  $f(x) = \frac{x-4}{x^3-49x}$

c)  $f(x) = \frac{5}{(x-5)(x+9)}$