

Name \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the domain of the rational function.

1)  $f(x) = \frac{4x - 1}{x^2 - 10x + 9}$

1) \_\_\_\_\_

A) all real numbers except  $-9, 1, \frac{1}{4}$

B) all real numbers except  $-9, 1$

C) all real numbers except  $9, 1$

D) all real numbers except  $9, 1, \frac{1}{4}$

Simplify the right-hand side of the equation.

2)  $f(x) = \frac{6x^3}{18x^8}$

2) \_\_\_\_\_

A)  $\frac{x^5}{3}$

B)  $\frac{1}{3}$

C)  $\frac{1}{3x^5}$

D)  $\frac{1}{3x^{11}}$

3)  $f(x) = \frac{x^2 - 4x - 12}{x^2 - 5x - 14}$

3) \_\_\_\_\_

A)  $\frac{x - 6}{x - 7}$

B)  $\frac{-4x - 6}{-5x - 7}$

C)  $\frac{-4x - 12}{-5x - 14}$

D)  $\frac{x^2 - 4x - 12}{x^2 - 5x - 14}$

4)  $f(x) = \frac{2x^2 + 2x - 4}{6x^3 + 12x^2 + 2x + 4}$

4) \_\_\_\_\_

A)  $\frac{x - 1}{3x + 1}$

B)  $\frac{x - 1}{3x^2 + 1}$

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

D)  $\frac{x + 1}{3x^2 - 1}$

Simplify the rational expression.

5)  $\frac{4x^2 - 25y^2}{6x^2 - 29xy + 35y^2}$

5) \_\_\_\_\_

A)  $\frac{2x - 5y}{3x - 7y}$

B)  $\frac{2x + 5y}{3x - 7y}$

C)  $\frac{2x + 5y}{3x + 7y}$

D)  $\frac{2x + 5y}{2x - 5y}$

Find the specified quotient function.

6) Given the functions  $f(x) = x^2 - 49$  and  $g(x) = x^2 - 16x + 63$ , find an equation of the quotient function

6) \_\_\_\_\_

$\frac{f}{g}$

A)  $\frac{f}{g}(x) = \frac{x - 7}{x + 9}$

B)  $\frac{f}{g}(x) = \frac{x - 7}{x - 9}$

C)  $\frac{f}{g}(x) = \frac{x - 9}{x + 7}$

D)  $\frac{f}{g}(x) = \frac{x + 7}{x - 9}$

Multiply and simplify.

7)  $\frac{(x+8)(x-9)}{(x-8)(x+1)} \cdot \frac{x(x-8)}{19(x-9)}$  7) \_\_\_\_\_

- A)  $\frac{x(x+8)}{19(x+1)}$       B)  $\frac{19(x-8)}{x(x+8)}$       C)  $\frac{x}{19}$       D)  $\frac{(x-9)}{19(x+1)(x-8)}$

8)  $\frac{z^2+10z+25}{z^2-49} \cdot \frac{z^2+7z}{z+5}$  8) \_\_\_\_\_

- A)  $\frac{(z+5)}{z-7}$       B)  $\frac{z}{z+7}$       C)  $\frac{z(z+5)}{z-7}$       D)  $\frac{z(z+5)}{z+7}$

9)  $\frac{x^2+7x+10}{5x^3-6x^2} \cdot \frac{25x^3-36x}{2x+4}$  9) \_\_\_\_\_

- A)  $\frac{(x+5)(5x+6)}{2x}$       B)  $\frac{(x-5)(5x+6)}{2}$       C)  $\frac{(x+5)(5x-6)}{2x}$       D)  $\frac{(x+5)(5x+6)}{2x^2}$

10)  $\frac{p^2+6pq+5q^2}{p^2-q^2} \cdot \frac{3p-3q}{6p^2+24pq-30q^2}$  10) \_\_\_\_\_

- A)  $\frac{1}{2(p-q)}$       B)  $\frac{1}{2(p+q)}$       C)  $2(p-q)$       D)  $-\frac{1}{2(p-q)}$

Divide and simplify.

11)  $\frac{x^2-3x-10}{2x^2-50} \div \frac{x^2+7x+10}{x^2+10x+25}$  11) \_\_\_\_\_

- A) -2      B)  $\frac{1}{2}$       C) 2      D)  $\frac{2(x+5)^2}{(x+2)^2}$

Perform the indicated operations. Simplify the result.

12)  $\left( \frac{5x^2-13x-6}{y^2+2y-3} \cdot \frac{y^2+3y-4}{15x^2+11x+2} \right) \div \frac{3x^2-8x-3}{6x^2-13x-5}$  12) \_\_\_\_\_

- A)  $\frac{3x+1}{2x-5}$       B)  $\frac{(y+4)(2x+5)}{(y+3)(3x-1)}$       C) 1      D)  $\frac{(y+4)}{(y+3)}$

Perform the indicated operation. Simplify the result.

13)  $\frac{2}{15a^3b} - \frac{1}{20ab^2}$  13) \_\_\_\_\_

- A)  $\frac{8b-3a^2}{60a^2b^3}$       B)  $\frac{8b+3a^2}{60a^3b^2}$       C)  $\frac{8b-1a^2}{60a^3b^2}$       D)  $\frac{8b-3a^2}{60a^3b^2}$

14)  $\frac{y+4}{y+5} - \frac{y+4}{y-2}$  14) \_\_\_\_\_

- A) 0      B)  $\frac{3(y+4)}{(y+5)(y-2)}$       C)  $\frac{-7(y+4)}{(y+5)(y-2)}$       D)  $\frac{7(y+4)}{(y+5)(y-2)}$

$$15) \frac{m-2}{m^2-4m-12} + \frac{5m+6}{m^2+5m+6}$$

15) \_\_\_\_\_

A)  $\frac{6m+4}{2m^2+1m-6}$

B)  $\frac{6m^2-23m-42}{(m-2)(m+6)(m-3)}$

C)  $6m+4$

D)  $\frac{6m^2-23m-42}{(m+2)(m-6)(m+3)}$

Perform the indicated operations and simplify.

$$16) \frac{8}{x+4} - \frac{x}{x-1} + \frac{x^2+8}{x^2+3x-4}$$

16) \_\_\_\_\_

A)  $\frac{12x}{(x+4)(x-1)}$

B)  $\frac{4x}{(x+4)(x-1)}$

C)  $\frac{4x}{(x-4)(x+1)}$

D)  $\frac{2x^2+12x-16}{(x-4)(x+1)}$

Simplify the complex rational expression.

$$17) \frac{\frac{5y^2-125}{y+4}}{\frac{20y-100}{y^2-16}}$$

17) \_\_\_\_\_

A)  $\frac{y^2-20}{4}$

B)  $-\frac{(y+5)(y-4)}{4}$

C)  $\frac{(y-5)(y+4)}{4}$

D)  $\frac{(y+5)(y-4)}{4}$

$$18) \frac{\frac{2}{x} - \frac{7}{x^2}}{\frac{9}{x^3} - \frac{8}{x}}$$

18) \_\_\_\_\_

A)  $\frac{x(2x-7)}{9+8x^2}$

B)  $\frac{2x-7}{9-8x^2}$

C)  $\frac{2x-7}{9-8x}$

D)  $\frac{x(2x-7)}{9-8x^2}$

Solve the rational equation.

$$19) \frac{14}{2x^2+14x} = 1 - \frac{1}{x+7}$$

19) \_\_\_\_\_

A) 0

B) 1

C) 14

D) -7, 1

$$20) \frac{y}{y+4} + \frac{8y+28}{y^2+7y+12} = \frac{4}{y+3}$$

20) \_\_\_\_\_

A) -6, 5

B) -3, -4

C) 4, 3

D) empty set

Answer Key

Testname: CHAPTER 12 TEST 1

- 1) C
- 2) C
- 3) A
- 4) B
- 5) B
- 6) D
- 7) A
- 8) C
- 9) A
- 10) A
- 11) B
- 12) B
- 13) D
- 14) C
- 15) D
- 16) B
- 17) D
- 18) D
- 19) B
- 20) D