

Rational Functions 5

Date _____ Period _____

Simplify each and state the excluded values.

1) $\frac{5r + 45}{9r^2 + 81r}$

2) $\frac{n^2 - 11n + 30}{n^2 - 5n - 6}$

3) $\frac{4m^2 + 2m - 6}{5m^2 - 11m + 6}$

4) $\frac{6r^2 + 44r - 90}{2r^2 + 14r - 36}$

Simplify each expression.

5) $\frac{15x + 30}{2x^2 + 5x + 3} \cdot \frac{10x^3 + 15x^2}{15x + 30}$

6) $\frac{5m^2 - 34m - 7}{35m^2 + 2m - 1} \cdot \frac{42m^3 - 6m^2}{6m^3 - 36m^2}$

7) $\frac{70x + 100}{14x^2 + 20x} \div \frac{x^2 + 5x - 14}{4x - 2x^2}$

8) $\frac{x^2 + 16x + 64}{4x} \div \frac{x^2 - 2x - 24}{4x^2 + 16x}$

9) $\frac{4}{15m^2 + 18m} + \frac{6m}{m - 4}$

10) $\frac{6}{6x + 12} + \frac{5x}{5x + 3}$

11) $\frac{3r}{3} - \frac{r - 6}{2r^2 - 72}$

12) $\frac{4}{x - 3} - \frac{x - 1}{2x + 5}$

$$13) \frac{\frac{6x}{x-2} + \frac{6}{x}}{\frac{x-4}{x} + \frac{1}{x}}$$

$$14) \frac{\frac{4}{a-4} + \frac{4}{a-4}}{\frac{a^2}{2} - \frac{a-4}{4}}$$

Solve each equation. Remember to check for extraneous solutions.

$$15) \frac{n+3}{n^2} + \frac{5n+15}{n^2} = \frac{1}{n}$$

$$16) \frac{1}{3m} + \frac{2}{3} = \frac{1}{6m}$$

$$17) \frac{2}{x-4} = \frac{1}{x-4} - \frac{6}{x^2-8x+16}$$

$$18) \frac{x+2}{x} = 1 + \frac{1}{x^2+2x}$$

$$19) \frac{1}{x^2-5x} + \frac{1}{x} = \frac{1}{x^3-9x^2+20x}$$

$$20) \frac{5}{a^2-6a} = \frac{1}{a^2-6a} + \frac{a-6}{a}$$

Answers to Rational Functions 5 (ID: 1)

1) $\frac{5}{9r}; \{0, -9\}$

2) $\frac{n-5}{n+1}; \{-1, 6\}$

3) $\frac{2(2m+3)}{5m-6}; \left\{\frac{6}{5}, 1\right\}$

4) $\frac{3r-5}{r-2}; \{-9, 2\}$

5) $\frac{5x^2}{x+1}$

6) $\frac{m-7}{m-6}$

7) $-\frac{10}{x+7}$

8) $\frac{(x+8)^2}{x-6}$

9) $\frac{4m-16+90m^3+108m^2}{3m(5m+6)(m-4)}$

10) $\frac{15x+3+5x^2}{(5x+3)(x+2)}$

11) $\frac{2r^2+12r-1}{2(r+6)}$

12) $\frac{12x+17-x^2}{(2x+5)(x-3)}$

13) $\frac{6x^2+6x-12}{x^2-5x+6}$

14) $\frac{32}{2a^3-9a^2+8a-16}$

15) $\left\{-\frac{18}{5}\right\}$

16) $\left\{-\frac{1}{4}\right\}$

17) $\{-2\}$

18) $\left\{-\frac{3}{2}\right\}$

19) $\{3\}$

20) $\{8, 4\}$