

Rational Operations and Equations - Test Review

Date _____ Period _____

Simplify each and state the excluded values.

1) $\frac{30x^4}{90x^2}$

2) $\frac{b-2}{2b^2-4b}$

3) $\frac{2r^2+13r+21}{r+3}$

4) $\frac{10b+8}{6b-18}$

Simplify each and state the excluded values.**Remember: When finding excluded values for division problems, you must consider the denominators in the original problem, as well as the denominators after you have rewritten the problems as multiplication.**

5) $\frac{4}{5} \cdot \frac{5k}{8k^4}$

6) $\frac{3}{3n} \div \frac{9n^4}{9}$

$$7) \frac{-n^2 + 15n - 56}{n - 7} \cdot \frac{6}{n^2 - 7n - 8}$$

$$8) \frac{1}{10n^2} \div \frac{3n + 5}{3n^2 - 10n - 25}$$

$$9) \frac{18n + 30}{5n + 5} \cdot \frac{3n + 3}{9n + 15}$$

$$10) \frac{4a - 2}{12a^2 - 6a} \div \frac{6a^2}{6a^2 - 18a}$$

Simplify each expression.

$$11) \frac{5x}{4x^2} - \frac{6}{4y}$$

$$12) \frac{4n}{n-4} - \frac{5}{2n+4}$$

$$13) \frac{2}{b-7} + \frac{9}{b+3}$$

$$14) \frac{5p}{6} + \frac{p+6}{p^2+6p+5}$$

Solve each equation. Remember to check for extraneous solutions.

$$15) \frac{3}{2} = \frac{3}{a} - \frac{a-3}{a}$$

$$16) \frac{1}{6} + \frac{b-4}{6b} = \frac{b+5}{2}$$

$$17) 1 + \frac{1}{m} = \frac{2m+2}{3m}$$

$$18) \frac{1}{2b} = \frac{b+3}{2} - \frac{b-1}{2}$$

$$19) \frac{k-5}{k} = \frac{1}{k^2+k} + \frac{k+4}{k+1}$$

$$20) \frac{4}{2x^2+3x+1} = \frac{2x^2-5x+3}{2x^2+3x+1} + \frac{1}{x+1}$$

Answers to Rational Operations and Equations - Test Review

- 1) $\frac{x^2}{3}; \{0\}$ 2) $\frac{1}{2b}; \{0, 2\}$ 3) $2r + 7; \{-3\}$ 4) $\frac{5b + 4}{3(b - 3)}; \{3\}$
- 5) $\frac{1}{2k^3}; \{0\}$ 6) $\frac{1}{n^5}; \{0\}$ 7) $-\frac{6}{n + 1}; \{7, 8, -1\}$ 8) $\frac{n - 5}{10n^2}; \left\{0, 5, -\frac{5}{3}\right\}$
- 9) $\frac{6}{5}; \left\{-1, -\frac{5}{3}\right\}$ 10) $\frac{a - 3}{3a^2}; \left\{0, \frac{1}{2}, 3\right\}$ 11) $\frac{5y - 6x}{4xy}$ 12) $\frac{8n^2 + 11n + 20}{2(n - 4)(n + 2)}$
- 13) $\frac{11b - 57}{(b - 7)(b + 3)}$ 14) $\frac{5p^3 + 30p^2 + 31p + 36}{6(p + 5)(p + 1)}$ 15) $\left\{\frac{12}{5}\right\}$
- 16) $\left\{-4, -\frac{1}{3}\right\}$ 17) $\{-1\}$ 18) $\left\{\frac{1}{4}\right\}$ 19) $\left\{-\frac{3}{4}\right\}$
- 20) $\left\{0, \frac{3}{2}\right\}$