

4.6 - Review Rationals WS

Simplify each and state the excluded values.

1) $\frac{35x - 14}{5x - 2} \div \frac{2x^2 + 6x + 4}{10x + 20}$

$\frac{35}{x+1} \quad x \neq \frac{2}{5}, -2, -1$

2) $\frac{2a + 4}{12a^2 + 24a} \cdot \frac{6a^2 - 30a}{6a + 18}$

$\frac{a-5}{6(a+3)} \quad x \neq 0, -2, -3$

3) $\frac{5v^2}{27v} \div \frac{35v^3 - 10v^2}{7v^2 + 47v - 14}$

$\frac{v+7}{27v} \quad x \neq 0, \frac{2}{7}, -7$

4) $\frac{16n^2 - 24n}{14n^2 - 7n - 21} \cdot \frac{21n^3 + 21n^2}{3n^3 - 24n^2}$

$\frac{8n}{n-8} \quad x \neq \frac{3}{2}, -1, 0, 8$

Simplify each expression.

5) $\frac{3}{a-1} - \frac{6a}{a-6}$

$\frac{-6a^2 + 9a - 18}{(a-6)(a-1)}$

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

$\frac{5m+4}{6m(m-1)}$

7) $\frac{4n}{n+3} + \frac{4}{n-3}$

$\frac{4n^2 - 8n + 12}{(n-3)(n+3)}$

8) $\frac{4p}{2p-2} + \frac{4}{p+2}$

$\frac{2p^2 + 8p - 4}{(p-1)(p+2)}$

9) $\frac{5}{v-4} - \frac{5v}{v+2}$

$\frac{-5v^2 + 25v + 10}{(v-4)(v+2)}$

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

$\frac{8n^2 + 24n - 16}{(n-4)(2n+5)}$

* Yes you can factor out GCF for most of the numerators.*

$$11) \frac{\frac{x}{36}}{\frac{1}{5} + \frac{x}{25}}$$

↑
Add
First

$$\frac{25x}{36x+180}$$

$$12) \frac{\frac{25}{3}}{\frac{3}{a^2} + \frac{1}{5}}$$

↑
Add
First

$$\frac{125a^2}{3a^2+45}$$

$$13) \frac{\frac{16}{x}}{\frac{1}{9} + \frac{1}{9}}$$

↑
Add

$$\frac{72}{x}$$

$$14) \frac{\frac{x}{9} + \frac{x+4}{9}}{3x}$$

↓ Add

$$\frac{2x+4}{27x}$$

Solve each equation. Remember to check for extraneous solutions.

$$15) \frac{a+1}{a^2} + \frac{1}{6a^2} = \frac{a+4}{6a^2}$$

$$a = -\frac{3}{5}$$

$$16) \frac{1}{n^2} = \frac{3}{n^2} - \frac{2}{n}$$

$$n = 1$$

$$17) \frac{1}{b^2-2b} = \frac{6}{b^2-2b} + \frac{1}{b-2}$$

$$b = -5$$

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

$$x = -\frac{2}{3}, 1$$

$$19) \frac{3x^2-6x+3}{2x^2-6x} + \frac{1}{2x} = \frac{1}{2x-6}$$

$$x = 2$$

$$20) \frac{4}{n+2} - \frac{n^2+4n-12}{n+2} = 1$$

$$n = 2, -7$$