

Pre-Calculus - Rational Equations

Free Response - Solve each equation. Remember to check for extraneous solutions.

1) $\frac{a+3}{5a^2} = \frac{6a+6}{5a^2} + \frac{1}{a^2}$

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

3) $\frac{1}{2k^2} = \frac{3}{4k} + \frac{1}{4k^2}$

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

5) $\frac{1}{v-8} - \frac{1}{v^2-6v-16} = \frac{7}{v^2-6v-16}$

6) $1 + \frac{8}{5x+8} = \frac{x-2}{5x+8}$

7) $\frac{1}{b^2+11b+28} - \frac{6}{b+4} = \frac{1}{b+7}$

8) $\frac{1}{2} = \frac{1}{4n+32} - \frac{3n-4}{2n+16}$

9) $\frac{b^2-9}{b^2-b} = \frac{1}{b-1} - \frac{7}{b}$

10) $\frac{1}{n^2-n} - \frac{n^2-3n-4}{n^2-n} = \frac{7}{n}$

11) $\frac{a-8}{a} + \frac{1}{a^2-3a} = \frac{7}{a^2-3a}$

12) $\frac{2n}{n-1} - \frac{1}{n+4} = \frac{1}{n^2+3n-4}$

Multiple Choice - Solve each equation. Remember to check for extraneous solutions.

13) $\frac{n-2}{2n^2} = \frac{n+1}{6n^2} - \frac{1}{n^2}$

- A) $\left\{-\frac{1}{2}\right\}$ B) $\{6\}$
 C) $\left\{\frac{1}{2}\right\}$ D) $\{-6, 6\}$

14) $\frac{m-5}{5m^2} = \frac{m-2}{m^2} - \frac{1}{m^2}$

- A) $\{-2\}$ B) $\{2\}$
 C) $\left\{\frac{5}{2}\right\}$ D) $\{-2, -6\}$

15) $\frac{p-5}{p^2} = \frac{p-6}{2p^2} - \frac{1}{p^2}$

- A) $\{-1\}$ B) $\{1, -2\}$
 C) $\{2\}$ D) $\{1\}$

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

- A) $\{-2\}$ B) $\{-4\}$
 C) $\{0\}$ D) $\{4\}$

$$17) \frac{8n+40}{n+1} + 1 = \frac{3n-6}{n+1}$$

- A) $\left\{-\frac{47}{6}\right\}$ B) $\left\{\frac{13}{3}\right\}$
 C) $\left\{-\frac{13}{3}\right\}$ D) $\left\{1, -\frac{13}{3}\right\}$

$$18) \frac{2}{x^2-12x+32} = \frac{1}{x^2-12x+32} - \frac{8}{x-8}$$

- A) $\left\{\frac{21}{5}\right\}$ B) $\left\{\frac{31}{8}\right\}$
 C) $\{-1\}$ D) $\{-4\}$

$$19) \frac{1}{6v} = \frac{1}{24v} - \frac{v+7}{12v}$$

- A) $\{4\}$ B) $\left\{-\frac{17}{2}\right\}$
 C) $\{0\}$ D) $\{-6\}$

$$20) \frac{1}{3n^2+5n} + \frac{1}{n} = \frac{3}{3n^2+5n}$$

- A) $\{4\}$ B) $\{-1\}$
 C) $\{-7\}$ D) $\{7\}$

$$21) 1 = \frac{b+5}{b} - \frac{1}{b^2+7b}$$

- A) $\left\{-\frac{34}{5}\right\}$ B) $\left\{\frac{34}{5}, -2\right\}$
 C) $\{1\}$ D) $\left\{\frac{34}{5}, 1\right\}$

$$22) 1 = \frac{b-5}{b-7} + \frac{b^2-13b+40}{b-7}$$

- A) $\{6, -4\}$ B) $\{6\}$
 C) $\{-6, -4\}$ D) $\{6, 4\}$

$$23) \frac{1}{m^2-2m} + \frac{1}{m+1} = \frac{1}{m^3-m^2-2m}$$

- A) $\{1\}$ B) $\{-7, 7\}$
 C) $\left\{\frac{17}{5}, 7\right\}$ D) $\{7\}$

$$24) \frac{4x+12}{x} = \frac{6x+6}{x} + \frac{4x+20}{x-1}$$

- A) $\{2, -5\}$ B) $\left\{2, \frac{3}{4}\right\}$
 C) $\{-1\}$ D) $\left\{2, \frac{1}{3}\right\}$

$$25) \frac{p-2}{p^2+p} = \frac{p+5}{p^3+p^2} + \frac{p^2-4p+4}{p^3+p^2}$$

- A) $\{9\}$ B) $\left\{\frac{9}{4}, 2\right\}$
 C) $\left\{-\frac{3}{4}, 2\right\}$ D) $\left\{-\frac{3}{4}, -5\right\}$

$$26) \frac{m}{8} - \frac{m^2-9}{8m} = 1$$

- A) $\left\{\frac{9}{8}, 4\right\}$ B) $\left\{\frac{9}{8}, -8\right\}$
 C) $\left\{\frac{9}{8}\right\}$ D) $\left\{\frac{9}{8}, -2\right\}$