Intermediate Algebra Skill

Solving Rational Equations

Solve each equation. Remember to check for extraneous solutions.

1) $1 = \dfrac{1}{3n} - \dfrac{n+6}{3n}$

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

3) $\dfrac{5}{x^2 - x - 12} - \dfrac{1}{x-4} = \dfrac{1}{x+3}$

4) $\dfrac{1}{a+5} = \dfrac{1}{a} + \dfrac{4a+16}{a^2+5a}$

5) $\dfrac{4r-16}{r^2-4r-5} - \dfrac{r-6}{r^2-4r-5} = \dfrac{1}{r-5}$

6) $\dfrac{3}{n^2+n} + \dfrac{1}{n} = \dfrac{1}{n^2+n}$

7) $\dfrac{6}{2x+3} = x - 3 + \dfrac{1}{2x+3}$

8) $\dfrac{4}{x-5} + \dfrac{x-2}{x-5} = \dfrac{x+2}{x^2-10x+25}$

9) $\dfrac{5}{x^2+x-6} - 1 = \dfrac{1}{x-2}$

10) $\dfrac{x^2+8x+15}{x^2+2x-8} - \dfrac{x+6}{x^2+2x-8} = \dfrac{x-1}{x-2}$

Answers to Solving Rational Equations

1) $\left\{-\dfrac{5}{4}\right\}$

2) $\{-1\}$

3) $\{3\}$

4) $\left\{-\dfrac{21}{4}\right\}$

5) $\left\{\dfrac{11}{2}\right\}$

6) $\{-3\}$

7) $\left\{\dfrac{7}{2}, -2\right\}$

8) $\{-2, 6\}$

9) $\{-4\}$

10) $\left\{-\dfrac{13}{4}\right\}$