Intermediate Algebra Skill

Performing Combined Operations on Rational Expressions

Simplify.

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

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

3) $\frac{x+4}{6x^2-20x}\bullet\left(\frac{x}{x^2-x-20}+\frac{2}{x+4}\right)$

4) $\frac{x^2-7x+12}{x^2-x-\frac{29}{3}}\bullet\left(\frac{3x+2}{x^2+5x-24}+\frac{7}{x^2+4x-32}\right)$

5) $\frac{8t^5}{2t^2-10t+12}\div\left(\frac{2t}{t^2-8t+15}-\frac{3t}{t^2-7t+10}\right)$

6) $\frac{9t^3}{3t^3-12t^2+9t}\div\left(\frac{t+4}{t^2-9}-\frac{3t-1}{t^2+2t-3}\right)$

7) $\left(5+\frac{1}{a}\right)\div\left(\frac{1}{a}-2\right)$

8) $\left(\frac{3}{x}+\frac{4}{y}\right)\div\left(\frac{4}{x}-\frac{3}{y}\right)$

9) $\left(\frac{x^2-y^2}{xy}\right)\div\left((x-y)\bullet\frac{1}{y}\right)$

10) $\left(\frac{a^2-4}{a^2+3a+2}\right)\bullet\left(\frac{a^2-6a-7}{a^2-5a-6}\right)$

11) $\left(\frac{2}{y-3}+\frac{1}{y+1}\right)\div\left(\frac{3}{y+1}+\frac{4}{y-3}\right)$

12) $\left(\frac{4}{x^2-1}-\frac{3}{x+1}\right)\div\left(\frac{5}{x^2-1}-\frac{2}{x-1}\right)$

13) $\left(\frac{y^2}{y^2-9}-\frac{y}{y+3}\right)\bullet\frac{9-y^2}{3}$

14) $\left(\frac{a}{a+3}+\frac{4}{5a}\right)\bullet\frac{2a^2+6a}{a^2+6a+18}$

15) $\left(\frac{1}{x^2-3x+2}+\frac{1}{x^2-4}\right)\div\left(\frac{1}{x^2+4x+4}+\frac{1}{x^2-4}\right)$

Answers to Performing Combined Operations on Rational Expressions

1) $\dfrac{-\left(3x^2+3x+4\right)}{x^2-1}$

2) $\dfrac{-6x+42}{(x+3)(x-2)(x+1)(x+3)}$

3) $\dfrac{1}{2x(x-5)}$

4) $\dfrac{3}{x+8}$

5) $-4t^4$

6) $\dfrac{-3t^2}{2t^2-13t+7}$

7) $\dfrac{5a+1}{1-2a}$

8) $\dfrac{3y+4x}{4y-3x}$

9) $\dfrac{x+y}{x}$

10) $\dfrac{(a-2)(a-7)}{(a+1)(a-6)}$

11) $\dfrac{3y-1}{7y-5}$

12) $\dfrac{7-3x}{3-2x}$

13) $-y$

14) $\dfrac{2\left(5a^2+4a+12\right)}{5\left(a^2+6a+18\right)}$

15) $\dfrac{(2x+1)(x+2)}{2x(x-1)}$