Elementary Algebra Skill

Manipulating Rational Expressions

Simplify each expression.

1) $\dfrac{27a^3b^2c}{36a^3bc^2}$

2) $\dfrac{8-x}{x^2-14x+48}$

3) $\dfrac{24b+16}{8b-48} \cdot \dfrac{3b^2-18b}{6b^3+4b^2}$

4) $\dfrac{8x^2+28x}{3x^2+18x+15} \cdot \dfrac{15x+15}{2x+7}$

5) $\dfrac{x+2}{5x^3+20x^2} \div \dfrac{1}{x+4}$

6) $\dfrac{3n}{4n^3+24n^2} \div \dfrac{3n^2+18n}{n^2-3n-54}$

7) $\dfrac{4x+10}{x^2+3x-18} - \dfrac{2x-2}{x^2+3x-18}$

8) $\dfrac{2}{a+3} + \dfrac{2}{a+5}$

9) $\dfrac{4y}{2x^2y} + \dfrac{2y}{3y^3}$

10) $\dfrac{n}{n^2+13n+42} + \dfrac{2}{3n^2+6n}$

11) $\dfrac{1}{x-1}\left(1 - \dfrac{2}{x+1}\right)$

12) $\dfrac{\dfrac{6}{a^2} - \dfrac{6}{b^2}}{\dfrac{3}{a} + \dfrac{3}{b}}$

Answers to Manipulating Rational Expressions

1) $\dfrac{3b}{4c}$

2) $-\dfrac{1}{x-6}$

3) $\dfrac{3}{2b}$

4) $\dfrac{20x}{x+5}$

5) $\dfrac{x+2}{5x^2}$

6) $\dfrac{n-9}{4n^2(n+6)}$

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

8) $\dfrac{4a+16}{(a+3)(a+5)}$

9) $\dfrac{6y^2+2x^2}{3x^2y^2}$

10) $\dfrac{3n^2+2n+14}{3n(n+6)(n+7)}$

11) $\dfrac{1}{x+1}$

12) $\dfrac{2(b-a)}{ab}$