

Rational Expressions

Simplify each and state the restrictions.

1) $\frac{2n^3 - 5n^2 + 3n}{-5n^2 + 8n - 3}$

2) $\frac{n^2 - 81}{9n^4 - 27n^3 + 18n^2}$

3) $\frac{4x + 32}{6x^2 + 75x + 216}$

4) $\frac{5b^3 + 35b^2 - 40b}{15b^3 + 48b^2 - 48b}$

5) $\frac{42b^2 + 66b + 24}{42b - 42}$

Perform the following operations; be sure to state the restrictions.

6) $\frac{18a - 48}{4} \cdot \frac{4a + 24}{3a^2 - 11a + 8}$

7) $\frac{2k^2 - 9k - 35}{15k - 3} \cdot \frac{5k - 1}{2k^2 + 21k + 40}$

8) $\frac{25x^2 - 5x}{3x^2 - 15x^3} \div \frac{7x + 2}{21x + 6}$

9) $\frac{9x^3 - 72x^2}{49x - 28} \cdot \frac{35x^2 - 76x + 32}{45x^3 - 72x^2}$

10) $\frac{21n^2 + 72n + 60}{3n + 6} \div \frac{49n^2 + 21n - 70}{56n^2 - 56n}$

11) $\frac{9x}{63x^2 + 72x} \div \frac{6x^3 + 60x^2}{7x^2 + 22x + 16}$

12) $\frac{7}{42x^2 - 30x} \div \frac{7x - 14}{63x^2 - 45x}$

13) $\frac{4x^2 - 20x + 24}{20x - 60} \cdot \frac{5x + 15}{10x - 20}$

14) $\frac{5v^2 - 25v + 30}{15v^2 + 30v} \cdot \frac{15v^2 + 30v}{5v - 10}$

15) $\frac{49x^2 - 63x + 8}{7x - 1} \div \frac{21x^2 - 24x}{6x^3 - 12x^2}$

16) $\frac{8p}{p + 6} - \frac{5}{7p + 35}$

17) $\frac{2}{8p^3} - \frac{6}{2p^2 - 11p - 40}$

18) $\frac{8}{a - 8} - \frac{3a}{a + 5}$

19) $\frac{6n}{n - 6} + \frac{5n}{5n + 3}$

20) $\frac{4}{3m - 5} - \frac{7}{3m - 8}$

21) $\frac{8a}{2a - 1} - \frac{6}{a - 5}$