

Operations with rational expressions problems

1. $\frac{3k}{4k+12} + \frac{k+5}{k^2+3k}$

Which expression is equivalent to the above sum? (no calculator)

A) $\frac{3k^2+4k+20}{4k(k+3)}$

B) $\frac{3k^2+15k}{4k(k+3)}$

C) $\frac{3k^2+15k}{4k(k+3)^2}$

D) $\frac{3k^2+4k+20}{4k(k+3)^2}$

2. $\frac{36x^4y^2-18x^6y^4}{6x^5y^2}$

Which expression is equivalent to the above for all $x > 1$ and $y > 1$? (no calculator)

A) $6xy-3xy^2$

B) $6x^5y^2-3x^6y^2$

C) $\frac{6x-3xy^2}{x^2}$

D) $\frac{6-3xy^2}{x}$

3. $\frac{9k^2-30k+25}{3k^2+16k-35} \times \frac{2k^2+5k-63}{2k^2-9k}$

Which expression is equivalent to the above product for $k \geq 35$? (no calculator)

A) $\frac{3(k^2+15)}{5(k+13)}$

B) $\frac{3k-5}{k}$

C) $\frac{(k+13)(k^2+15)}{6k^2+32k-23}$

D) $\frac{(k^2+15)}{6k^2+32k-23}$

4. $\frac{7m^2+6m}{4m-7} - \frac{3m}{4m-7}$

Which expression is equivalent to the above difference? (no calculator)

A) $\frac{4m^2+6m}{4m-7}$

B) $\frac{4m^2+3m}{4m-7}$

C) $\frac{7m^2+3m}{4m-7}$

D) $\frac{7m^2}{4m-7}$

5. $\frac{8}{5y} \times \frac{2x}{16y}$

Which expression is equivalent to the above product for all $y > 0$? (no calculator)

A) $-\frac{x}{5y^2}$

B) $\frac{x}{10y}$

C) $-\frac{x}{10y^2}$

D) $\frac{x}{5y^2}$

6. $\frac{2x}{5b} - \frac{7x}{10b}$

Which expression is equivalent to the above difference for all $b < 0$? (no calculator)

A) $-\frac{x}{b}$

B) $-\frac{3x}{10b}$

C) $\frac{3x}{10b}$

D) $-\frac{x}{2b}$

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7.
$$\frac{\left(\frac{x^7 y^4 z^3}{ab}\right)}{\left(\frac{x^7 y^3 z^2}{a^3 b^2}\right)}$$

Which expression is equivalent to the above quotient for all $x, y, z, a, b > 0$? (no calculator)

- A) $yz a^2 b$
- B) $xyzab$
- C) $\frac{1}{yza^2 b}$
- D) 1

8.
$$\frac{16c^2 - 4c^3}{4c^2 - 64}$$

Which expression is equivalent to the above for all $c > 4$? (no calculator)

- A) $-\frac{c}{4}$
- B) $\frac{c^2}{c-4}$
- C) $\frac{c}{4}$
- D) $-\frac{c^2}{c+4}$

9.
$$\frac{x^2 + 7x + 12}{x^2 + 9x + 20}$$

Which expression is equivalent to the above for all $x > 0$? (no calculator)

- A) $\frac{x+3}{x+4}$
- B) $\frac{x+4}{x+5}$
- C) $\frac{x+3}{x+5}$
- D) $\frac{x-3}{x+5}$

10.
$$\frac{x^3 + 7x^2}{x^3}$$

Which expression is equivalent to the above for all $x > 1$? (no calculator)

- A) $7x^2$
- B) $\frac{x+7}{x}$
- C) $1+7x^2$
- D) $\frac{1+7x}{x}$