

5. Operations on and simplification of rational expressions  
Multiple Choice Practice Problems

1 Reduce to lowest terms:  $\frac{225x^8y^4z^6}{75x^3y^5z^8}$

- a.  $\frac{3x^5}{yz^2}$
- b.  $3x^5 \frac{y}{z^2}$
- c.  $\frac{3x^5yz^2}{1}$
- d.  $\frac{3}{x^5yz^2}$
- e.  $\frac{3x^5z^2}{y}$

2 Find  $\frac{-6(x^2 - 1)}{x + 4} \div \frac{-2(2x + x^2 + 1)}{4x + x^2}$

- a.  $\frac{3x(x - 1)}{x + 1}$
- b.  $3x(x - 1)$
- c.  $\frac{12(x^2 - 1)(2x + x^2 + 1)}{x(x + 2)^2}$
- d.  $\frac{3x - 3}{x + 1}$
- e.  $\frac{-2x(x - 1)}{x + 1}$

3 Find the Least Common Denominator (LCD) for the following rational expressions:

$\frac{x + 9}{8x^2(x - 1)}$  and  $\frac{x - 2}{54x(x^2 - 1)}$

- a. LCD =  $216x^2(x^2 - 1)$
- b. LCD =  $432x^2(x - 1)(x^2 - 1)$
- c. LCD =  $432x^2(x^2 - 1)$
- d. LCD =  $216x^2(x - 1)$
- e. LCD =  $216x^2(x - 1)(x^2 - 1)$

4 Find  $\frac{x + 3}{x - 5} - \frac{x}{x + 1}$

- a.  $\frac{3}{2x-6}$
- b.  $\frac{9x+3}{(x+1)(x-5)}$
- c.  $9x+3$
- d.  $\frac{3-x}{(x+1)(x-5)}$
- e.  $\frac{3}{(x+1)(x-5)}$

5 Simplify:  $\frac{\frac{2}{x-1} - \frac{3}{x+1}}{\frac{2}{x-1} + \frac{3}{x+1}}$

- a.  $\frac{-x-1}{5x+5}$
- b.  $\frac{-x-1}{5x-1}$
- c.  $\frac{5-x}{5x-1}$
- d.  $\frac{-1}{5}$
- e.  $\frac{\frac{5-x}{x^2-1}}{5x-1}$

6 Simplify:  $\left(\frac{(x^2y^2)^2}{x^2y}\right)^3$

- a.  $x^6y^9$
- b.  $x^{10}y^3$
- c.  $x^6y^6$
- d.  $x^6y^9$
- e.  $y^3$