Name: _____ Period: _____ Date: _____

Simplifying Rational Expressions Bell Work

Simplify the following rational expressions.

1. $\frac{10x^2}{15x^2}$

2. $\frac{10m^5}{30m^3}$

3. $\frac{30x^2-45x}{5x}$

4. $\frac{46x^4-69x^3}{23x^2}$

5. $\frac{7x}{14x^2-21x}$

6. $\frac{6m^2}{9m^4-15m^3}$

7. $\frac{ax-ay}{by-bx}$

8. $\frac{14ax+21a}{35ay+42a}$

9. $\frac{9x^2-6xy+y^2}{9x^2-y^2}$

10. $\frac{a^2+2a+1+ab+b}{9a+9b+9}$

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Simplifying Rational Expressions Bell Work

Answer:

Simplify the following rational expressions.

1. $\frac{10x^2}{15x^2}$

Solution:

$$\frac{10x^2}{15x^2} = \frac{(\cancel{5x^2})2}{(\cancel{5x^2})3} = \frac{2}{3}$$

2. $\frac{10m^5}{30m^3}$

Solution:

$$\frac{10m^5}{30m^3} = \frac{(\cancel{10m^3})m^2}{(\cancel{10m^3})3} = \frac{m^2}{3}$$

3. $\frac{30x^2-45x}{5x}$

Solution:

$$\frac{30x^2 - 45x}{5x} = \frac{\cancel{5x}(6x - 9)}{\cancel{5x}} = 6x - 9$$

4. $\frac{46x^4-69x^3}{23x^2}$

Solution:

$$\frac{46x^4 - 69x^3}{23x^2} = \frac{\cancel{23}x^{\cancel{3}}(2x - 3)}{\cancel{23x^2}} = x(2x - 3)$$

5. $\frac{7x}{14x^2-21x}$

Solution:

$$\frac{7x}{14x^2 - 21x} = \frac{\cancel{7x}}{\cancel{7x}(2x - 3)} = \frac{1}{2x - 3}$$

6. $\frac{6m^2}{9m^4-15m^3}$

Solution:

$$\frac{6m^2}{9m^4 - 15m^3} = \frac{\cancel{3m^2}(2)}{\cancel{3m^3}(3m - 5)} = \frac{2}{m(3m - 5)}$$

7. $\frac{ax - ay}{by - bx}$

Solution:

$$\frac{ax - ay}{by - bx} = \frac{a\cancel{(x - y)}}{-b\cancel{(-y + x)}} = -\frac{a}{b}$$

8. $\frac{14ax+21a}{35ay+42a}$

Solution:

$$\frac{14ax + 21a}{35ay + 42a} = \frac{\cancel{7a}(2x + 3)}{\cancel{7a}(5y + 6)} = \frac{2x + 3}{5y + 6}$$

9. $\frac{9x^2-6xy+y^2}{9x^2-y^2}$

Solution:

$$\frac{9x^2 - 6xy + y^2}{9x^2 - y^2} = \frac{(3x - y)(\cancel{3x - y})}{(3x + y)(\cancel{3x - y})} = \frac{3x - y}{3x + y}$$

10. $\frac{a^2+2a+1+ab+b}{9a+9b+9}$

Solution:

$$\frac{a^2 + 2a + 1 + ab + b}{9a + 9b + 9} = \frac{(a^2 + 2a + 1) + (ab + b)}{9(a + b + 1)}$$

$$= \frac{(a+1)(a+1)+b(a+1)}{9(a+b+1)} = \frac{\cancel{(a+1+b)}(a+1)}{9\cancel{(a+b+1)}} = \frac{(a+1)}{9}$$