

A.A.16: Rational Expressions 3: Simplify fractions with polynomials in the numerator and denominator by factoring both and renaming them to lowest terms

1 Which expression is in simplest form?

1) $\frac{x}{x^2}$

2) $\frac{9}{x^2 + 9}$

3) $\frac{x^2 - 4}{x + 2}$

4) $\frac{x^2 - 6x + 9}{x^2 - x - 6}$

2 For all values of x for which the expression is

defined, $\frac{2x + x^2}{x^2 + 5x + 6}$ is equivalent to

1) $\frac{1}{x + 3}$

2) $\frac{x}{x + 3}$

3) $\frac{1}{x + 2}$

4) $\frac{x}{x + 2}$

3 Express in simplest form: $\frac{x^2 - 5x - 24}{x^2 - 8x}$

4 Express $\frac{x^2 + 3x - 10}{x^2 + 5x}$ as a fraction in simplest form.

5 Simplify: $\frac{x^2 + 6x + 5}{x^2 - 25}$

6 Simplify: $\frac{9x^2 - 15xy}{9x^2 - 25y^2}$

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Answer Section

1 ANS: 2

$$\frac{x}{x^2} = \frac{1}{x} \cdot \frac{x^2 - 4}{x + 2} = \frac{(x + 2)(x - 2)}{x + 2} = x - 2 \cdot \frac{x^2 - 6x + 9}{x^2 - x - 6} = \frac{(x - 3)(x - 3)}{(x - 3)(x + 2)} = \frac{x - 3}{x + 2}$$

REF: 060712b

2 ANS: 2

$$\frac{x(x + 2)}{(x + 3)(x + 2)} = \frac{x}{(x + 3)}$$

REF: 060202b

3 ANS:

$$\frac{x + 3}{x} \cdot \frac{x^2 - 5x - 24}{x^2 - 8x} = \frac{(x - 8)(x + 3)}{x(x - 8)} = \frac{x + 3}{x}$$

REF: 060837a

4 ANS:

$$\frac{x - 2}{x}$$

REF: 088704siii

5 ANS:

$$\frac{x + 1}{x - 5} \cdot \frac{(x + 5)(x + 1)}{(x + 5)(x - 5)} = \frac{x + 1}{x - 5}$$

REF: 010631a

6 ANS:

$$\frac{3x}{3x + 5y}$$

REF: 069924a