

Algebra 1 Benchmark 13.1

Topic: Multiplying and Dividing Rational Expressions

Simplify the following expressions.

1. $\frac{a^2-9}{a+6} \cdot \frac{a^2+3a-18}{2a+6}$

$\frac{(a+3)(a-3)}{a+6} \cdot \frac{(a+6)(a-3)}{2(a+3)}$

$\frac{(a-3)(a-3)}{2}$ or $\frac{(a-3)^2}{2}$

2. $\frac{x^2-4x+4}{x^3-10x^2+16x} \div \frac{9x^2-1}{x^2-8x}$

$\frac{(x-2)(x-2)}{x(x-8)(x-2)} \cdot \frac{x(x-8)}{(3x-1)(3x+1)}$

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

Algebra 1 Benchmark 13.2

Topic: Solve and Simplify Rational Expressions/Equations

1. Solve: $\frac{5}{a+2} = \frac{7}{3a-2}$

$5(3a-2) = 7(a+2)$

$15a - 10 = 7a + 14$

$-7a \quad -7a$

$8a - 10 = 14$

$+10 \quad +10$

$8a = 24 \quad a = 3$

2. Simplify: $\frac{x^2-20}{x+5} - \frac{5}{x+5}$

$\frac{(x^2-20)-(5)}{x+5} = \frac{x^2-25}{x+5}$

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

Algebra 1 Benchmark 9.1

Topic: Solving Systems by Substitution and Elimination

1. What ordered pair is the solution to this system? (Use substitution)

$x-2y=2$

$y=x-1$

$x-2(x-1)=2$

$x-2x+2=2$

$-x+2=2$

$-x=0$

$x=0$

$y=(0)-1$

$y=-1$

Ordered pair: $(0, -1)$

2. What ordered pair is the solution to this system? (Use elimination/linear combinations)

$3x-2y=2$

$-5x+3y=-1$

$9x-6y=6$

$-10x+6y=-2$

$-1x = 4$

$x = -4$

$3(-4) - 2y = 2$

$-12 - 2y = 2$

$-2y = 14$

$y = -7$

Ordered pair: $(-4, -7)$