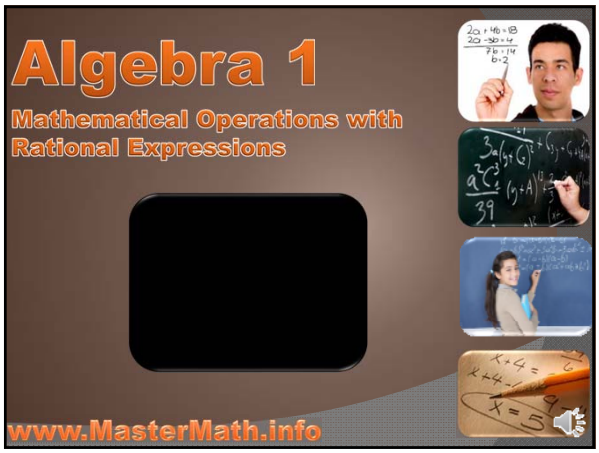
Algebra 1
Mathematical Operations with Rational Expressions
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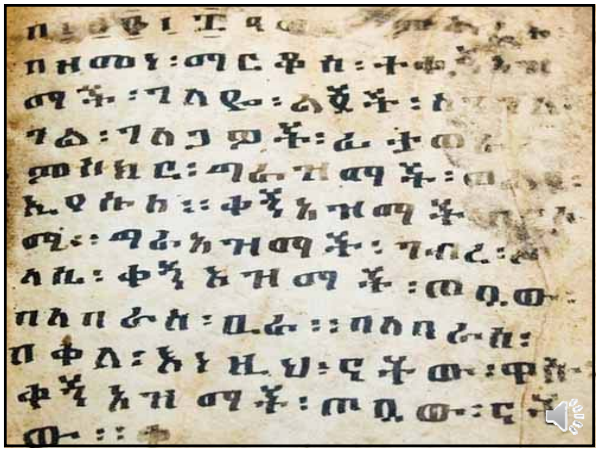
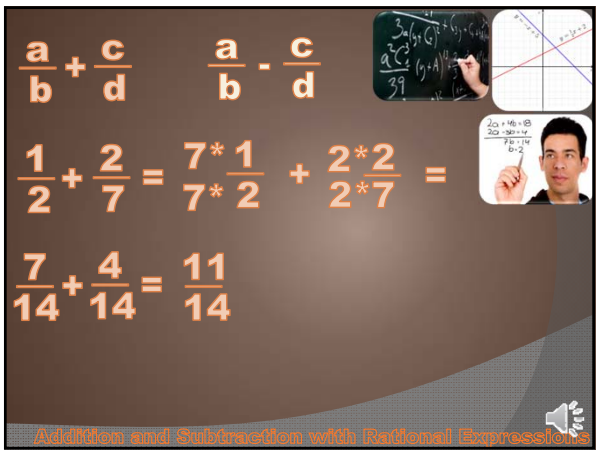
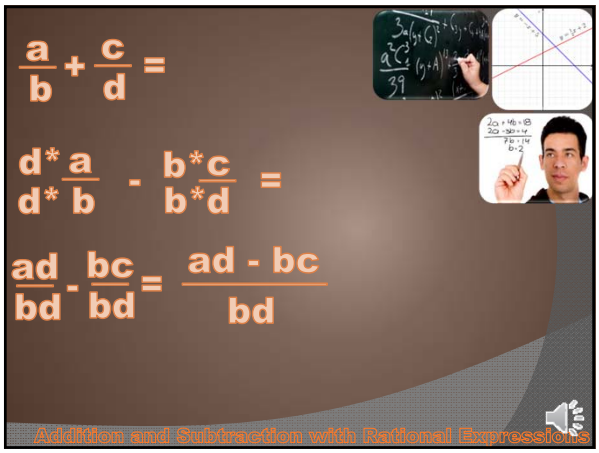
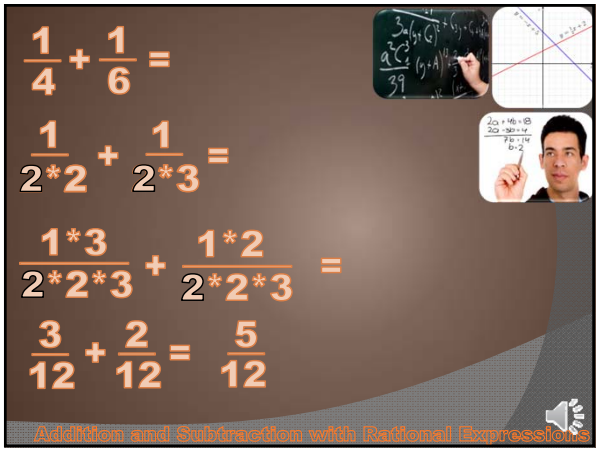
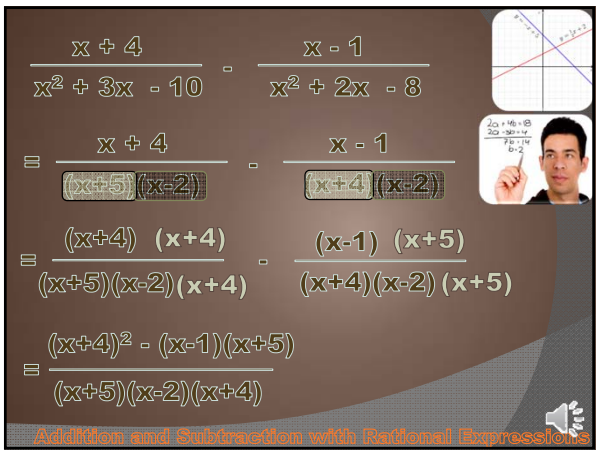
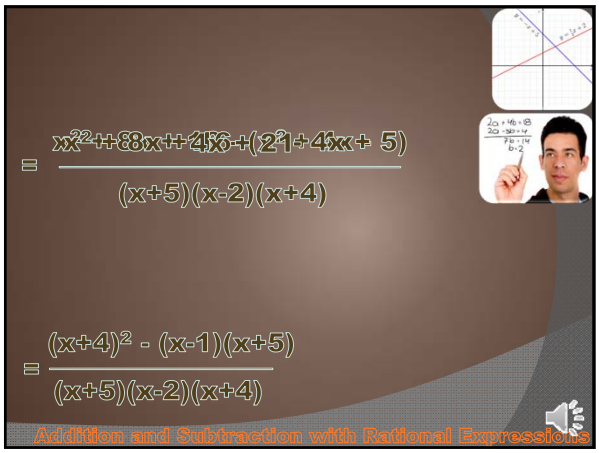


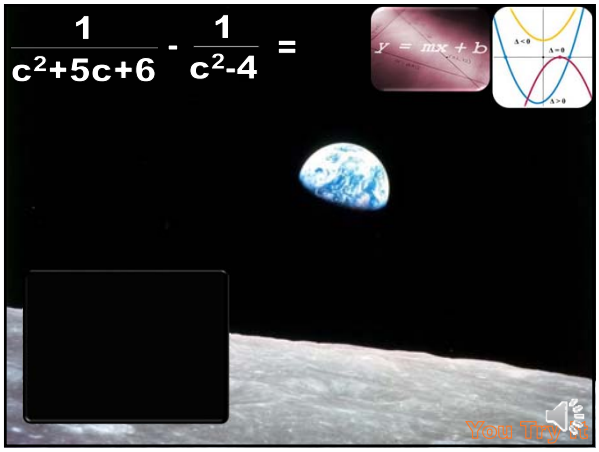

a/b + c/d
a/b - c/d
1/2 + 2/7 = 7*1/7*2 + 2*2/2*7 =
7/14 + 4/14 = 11/14
Addition and Subtraction with Rational Expressions

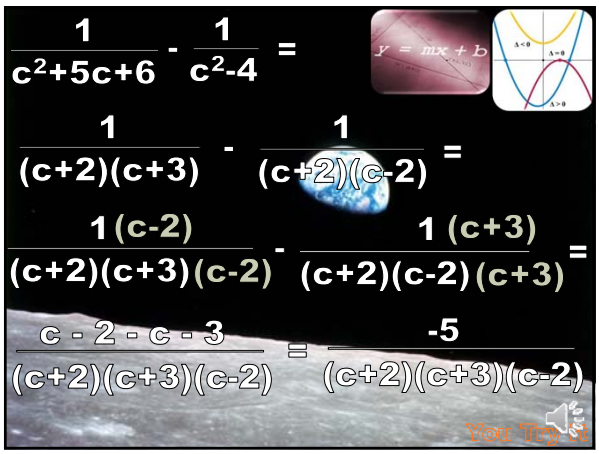

$\frac{a}{b} + \frac{c}{d} =$
$\frac{d*a}{d*b} - \frac{b*c}{b*d} =$
$\frac{ad}{bd} - \frac{bc}{bd} = \frac{ad - bc}{bd}$
Addition and Subtraction with Rational Expressions

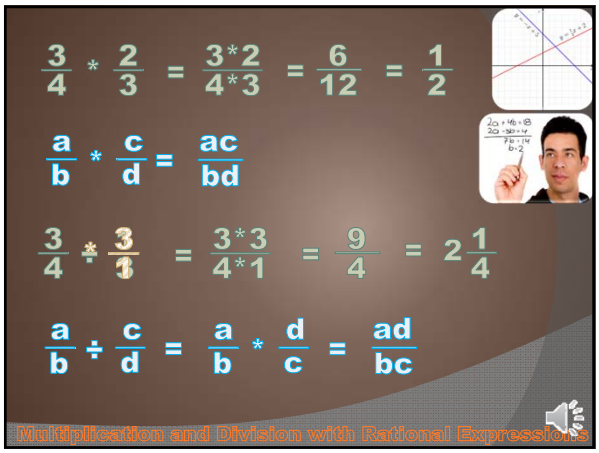

$\frac{1}{4} + \frac{1}{6} =$
$\frac{1}{2*2} + \frac{1}{2*3} =$
$\frac{1*3}{2*2*3} + \frac{1*2}{2*2*3} =$
$\frac{3}{12} + \frac{2}{12} = \frac{5}{12}$
Addition and Subtraction with Rational Expressions

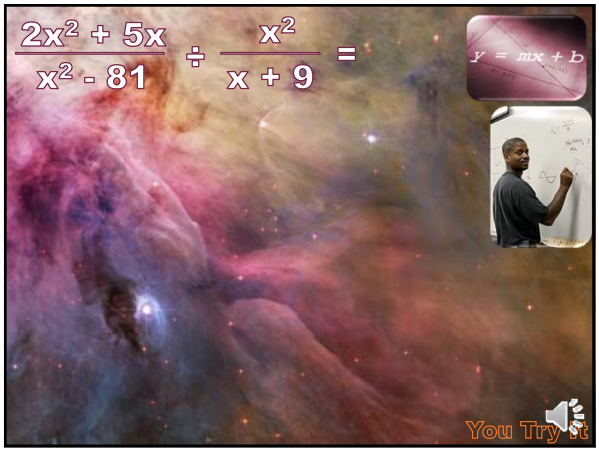

$\frac{x+4}{x^2+3x-10} - \frac{x-1}{x^2+2x-8}$
$= \frac{x+4}{(x+5)(x-2)} - \frac{x-1}{(x+4)(x-2)}$
$= \frac{(x+4)(x+4)}{(x+5)(x-2)(x+4)} - \frac{(x-1)(x+5)}{(x+4)(x-2)(x+5)}$
$= \frac{(x+4)^2 - (x-1)(x+5)}{(x+5)(x-2)(x+4)}$
Addition and Subtraction with Rational Expressions

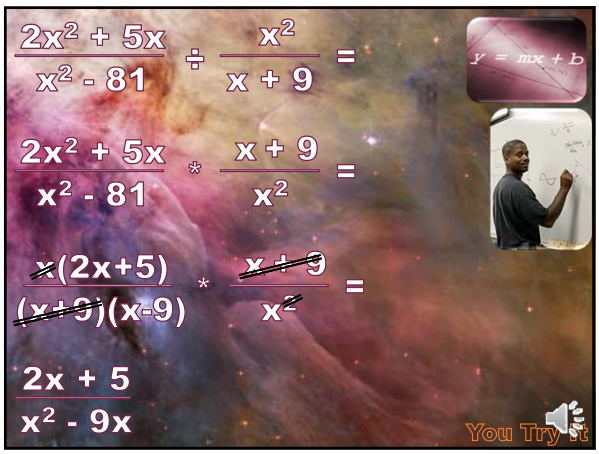

$= \frac{x^2+8x+15+(2x^2+4x+5)}{(x+5)(x-2)(x+4)}$
$= \frac{(x+4)^2 - (x-1)(x+5)}{(x+5)(x-2)(x+4)}$
Addition and Subtraction with Rational Expressions

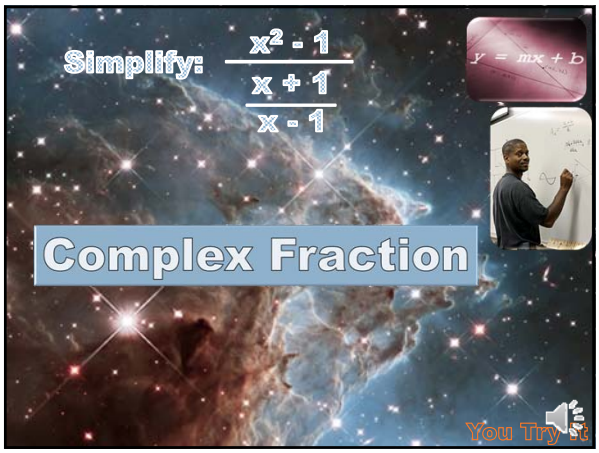

$\frac{1}{c^2+5c+6} - \frac{1}{c^2-4} =$
You Try

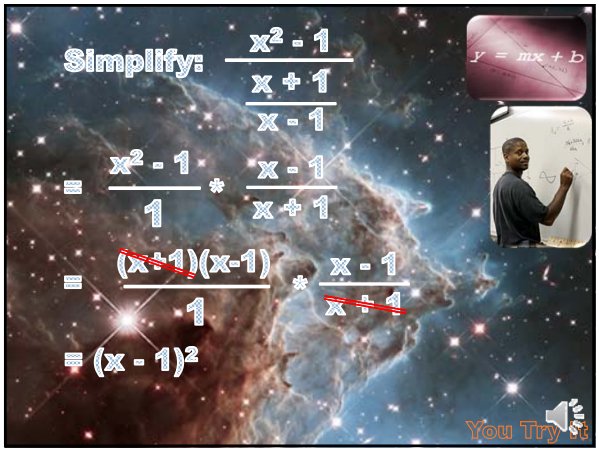

$\frac{1}{c^2+5c+6} - \frac{1}{c^2-4} =$
$\frac{1}{(c+2)(c+3)} - \frac{1}{(c+2)(c-2)} =$
$\frac{1(c-2)}{(c+2)(c+3)(c-2)} - \frac{1(c+3)}{(c+2)(c-2)(c+3)} =$
$\frac{c-2-c-3}{(c+2)(c+3)(c-2)} = \frac{-5}{(c+2)(c+3)(c-2)}$
You Try


$\frac{3}{4} * \frac{2}{3} = \frac{3*2}{4*3} = \frac{6}{12} = \frac{1}{2}$
$\frac{a}{b} * \frac{c}{d} = \frac{ac}{bd}$
$\frac{3}{4} \div \frac{3}{1} = \frac{3*3}{4*1} = \frac{9}{4} = 2\frac{1}{4}$
$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} * \frac{d}{c} = \frac{ad}{bc}$
Multiplication and Division with Rational Expressions


$\frac{2x^2 + 5x}{x^2 - 81} \div \frac{x^2}{x + 9} =$
$y = mx + b$
You Try It


$\frac{2x^2 + 5x}{x^2 - 81} \div \frac{x^2}{x + 9} =$
$\frac{2x^2 + 5x}{x^2 - 81} * \frac{x + 9}{x^2} =$
$\frac{x(2x+5)}{(x+9)(x-9)} * \frac{x+9}{x^2} =$
$\frac{2x + 5}{x^2 - 9x}$
$y = mx + b$
You Try It


Simplify: $\frac{x^2 - 1}{\frac{x + 1}{x - 1}}$
Complex Fraction
You Try It!


Simplify: $\frac{x^2 - 1}{\frac{x + 1}{x - 1}}$
$= \frac{x^2 - 1}{1} * \frac{x - 1}{x + 1}$
$= \frac{(x+1)(x-1)}{1} * \frac{x - 1}{x + 1}$
$= (x - 1)^2$
You Try It!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