

SM3 PROPERTIES 3-4 (Add and Subtract Rational Expressions)

Identity Property of Multiplication The numeral “one” multiplied by any number does not change the “value” of the number (the product will have an “equivalent” value).

Used for: Rationalizing Denominators: $\frac{2}{\sqrt{3}} * \left(\frac{\sqrt{3}}{\sqrt{3}}\right) = \frac{2\sqrt{3}}{3}$

Used for: Obtaining Common Denominators:

$$\frac{2}{3} + \frac{4}{5} = \frac{2}{3} * \left(\frac{5}{5}\right) + \frac{4}{5} * \left(\frac{3}{3}\right) = \frac{10}{15} + \frac{12}{15} = \frac{22}{15}$$

$$\frac{2}{(x-3)} + \frac{4}{(x-5)} = \frac{2}{(x-3)} * \left(\frac{(x-5)}{(x-5)}\right) + \frac{4}{(x-5)} * \left(\frac{(x-3)}{(x-3)}\right) = \frac{2(x-5)}{(x-3)(x-5)} + \frac{4(x-3)}{(x-3)(x-5)}$$

$$= \frac{2(x-5) + 4(x-3)}{(x-3)} = \frac{2x - 10 + 4x - 12}{(x-3)} = \frac{6x - 22}{(x-3)} = \frac{2(3x - 11)}{(x-3)}$$