CSC 240

ALGEBRA REVIEW

Fractions

Inequalities

Polynomials

Equations

Exponents

Fractions – Multiplication

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$$

$$\frac{2}{3} \cdot \frac{1}{2} = \frac{2}{6}$$

Fractions – Multiplication

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$$

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c}$$

$$\frac{2}{3} \cdot \frac{1}{2} = \frac{2}{6}$$

$$\frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \cdot \frac{2}{1} = \frac{6}{4}$$

Fractions - Addition

$$\frac{a}{b} + \frac{c}{b} = \frac{(a+c)}{b}$$

$$\frac{a}{b} + \frac{c}{d} = \frac{ab}{bd} + \frac{cb}{bd}$$

$$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$$

$$\frac{1}{3} + \frac{1}{2} = ?$$

Fractions - Addition

$$\frac{a}{b} + \frac{c}{b} = \frac{(a+c)}{b}$$

$$\frac{a}{b} + \frac{c}{d} = \frac{ab}{bd} + \frac{cb}{bd}$$

$$\left(\frac{2}{2} \times \frac{1}{3}\right) + \left(\frac{1}{2} \times \frac{3}{3}\right)$$

$$\frac{2}{6} + \frac{3}{6} = \frac{5}{6}$$

Inequalities

$m < n \equiv m + 1 \leq n$

$$2 < x < 3$$

"is equivalent to…"

$$2 < x \quad \equiv \quad 3 \leq x$$

Polynomials

$$x^2 = (2y)^2$$

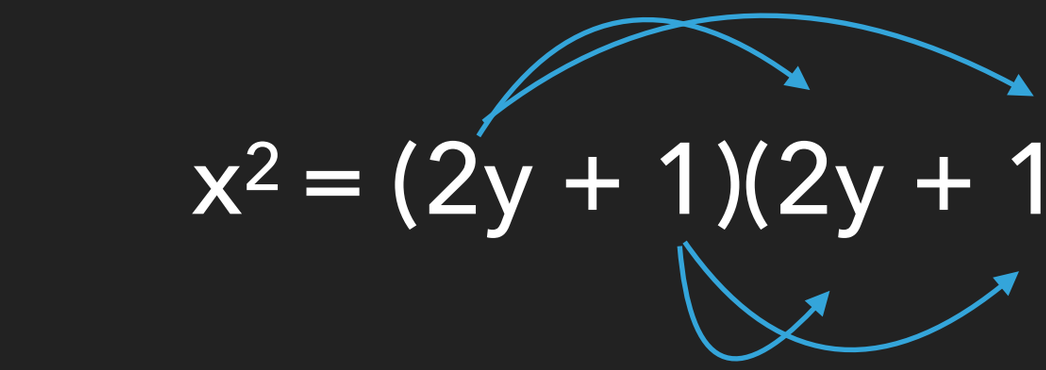
$$x^2 = (2y)(2y)$$

$$x^2 = 4y^2$$

Polynomials

$$x^2 + 2x + 1 = (x + 1)^2$$
$$(x^2 - y^2) = (x + y)(x - y)$$

$$x^2 = (2y + 1)^2$$



$$x^2 = (2y + 1)(2y + 1)$$

$$x^2 = 4y^2 + 2y + 2y + 1$$

$$x^2 = 4y^2 + 4y + 1$$

$$2x + 3 = 5$$

$$2x + 3 - 3 = 5 - 3$$

$$2x = 2$$

$$2x / 2 = 2 / 2$$

$$x = 1$$

Equations – Algebraic Manipulation

Equations – Chaining

$$(2x + 2)^2 - (3x)^2 = 4x^2 + 8x + 4 - 9x^2$$
$$= (4x^2 - 9x^2) + 8x + 4$$
$$= -5x^2 + 8x + 4$$

Exponents

$$x^a \cdot x^b = x^{(a+b)}$$

$$x^{(n+1)} = x \cdot x^n$$

$$(x^a)^b = x^{(a \cdot b)}$$

$$(x^a)^b = x^{(a \cdot b)} = (x^b)^a$$

$$x^{\frac{1}{2}} = \sqrt{x}$$

$$x^{\frac{1}{a}} = \sqrt[a]{x}$$