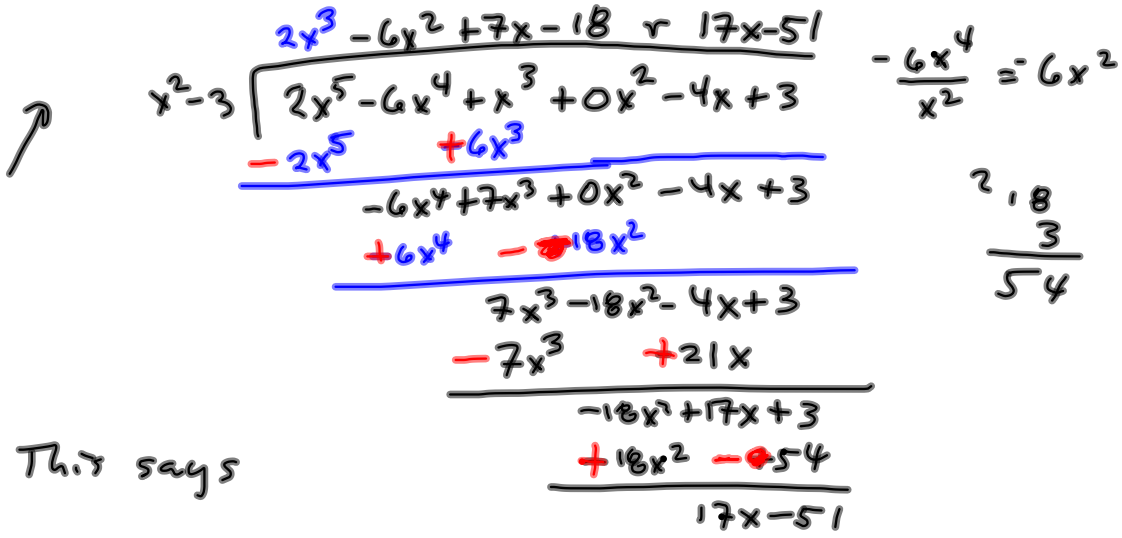


This says

$2x^5 - 6x^4 + x^3 - 4x + 3 = (x^2 - 3)(2x^3 - 6x^2 + 7x - 18) + 17x - 51$

$28 \div 3$ $\qquad \frac{28}{3} = 9 + \frac{1}{3}$

$28 = 3 \cdot 9 + 1$

Apr 24-9:11 AM

$(5x^5 - 24x^4 + 14x^3 + 11x^2 + 0x + 7) \div (x-4)$

$4\,|\,5 \quad -24 \quad 14 \quad 11 \quad 0 \quad 7$

$\quad\quad 20 \quad -16 \quad -8 \quad 12 \quad 48$ Bonus

$5 \quad -4 \quad -2 \quad 3 \quad 12 \quad 55 = f(4)$

$x^4 \quad x^3 \quad x^2 \quad x \quad c \quad r$

This says

$5x^5 - 24x^4 + 14x^3 + 11x^2 + 7 = (x-4)(5x^4 - 4x^3 - 2x^2 + 3x + 12) + 55$

Basic Skills Quiz.

The answers are there. Drill until you can nail the whole quiz.

I'm looking for worked examples!

(17) $x^3+y^3 = (x+y)(x^2-xy+y^2)$

$8x^3+27y^6$

$(2x)^3+(3y^2)^3 = (2x+3y^2)((2x)^2-(2x)(3y^2)+(3y^2)^2)$

$= (2x+3y^2)(4x^2-6xy^2+9y^4)$

§ 8.3 Quadratic Methods.

LCD = $(x-1)(x+1)$

#47 $\frac{x}{x-1} + \frac{1}{x+1} = \frac{2}{x^2-1}$ $\mathcal{D} = \{x \mid x \neq \pm 1\}$

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

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

$\frac{A}{B} = \frac{C}{B} \Rightarrow A = C$

$x^2 + x + x - 1 = 2$

$x^2 + 2x - 1 = 2$

$x^2 + 2x - 3 = 0$

$(x-1)(x+3) = 0$

$\Rightarrow$ $x = 1$ or $x = -3$ $\rightarrow$ $x \in \{-3\}$

Extraneous.

$\frac{1}{1-1} + \frac{1}{1+1} = \frac{2}{1^2-1}$?

$\frac{1}{0} + \frac{1}{2} = \frac{2}{0}$?

Equations that are quadratic in form.

$x^{-2} - x^{-1} - 6 = 0$

Let $u = x^{-1}$. Then $(x^{-1})^2 = x^{-2} = u^2$

This gives $u^2 - u - 6 = 0$

$x - \sqrt{x} - 2 = 0$

Let $u = \sqrt{x}$, then $u^2 = \sqrt{x}^2 = x$

$\therefore x = \sqrt{x}^2 = u^2$

This gives $u^2 - u - 2 = 0$

$x^4 - x^2 - 20 = 0$

Let $u = x^2$. Then $x^4 = (x^2)^2 = u^2$

This gives

$u^2 - u - 20 = 0$

$x^{-2} - x^{-1} - 6 = 0$

Let $u = x^{-1}$. Then $(x^{-1})^2 = x^{-2} = u^2$

This gives $u^2 - u - 6 = 0$

$-3 + 2 = -1 \quad (-3)(2) = -6$ ✓

$(u-3)(u+2) = 0$

$(a^b)^c = a^{bc}$

$\Rightarrow u = 3$ OR $u = -2$

$x^{-1} = 3$

$(x^{-1})^{-1} = 3^{-1}$

$x = \frac{1}{3}$

$\frac{1}{x} = 3$

$\frac{1}{x} = \frac{3x}{x}$

$1 = 3x$

$\frac{1}{3} = x$

$x^{-1} = -2$

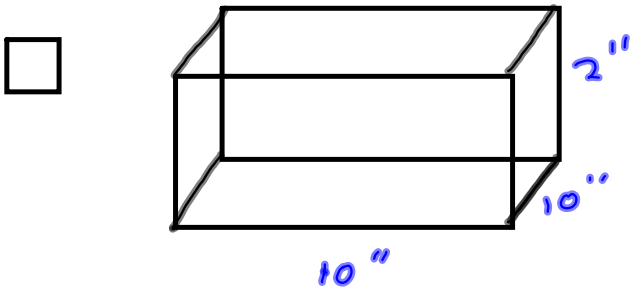
$\frac{1}{x} = -2$

$1 = -2x$

$-\frac{1}{2} = x$

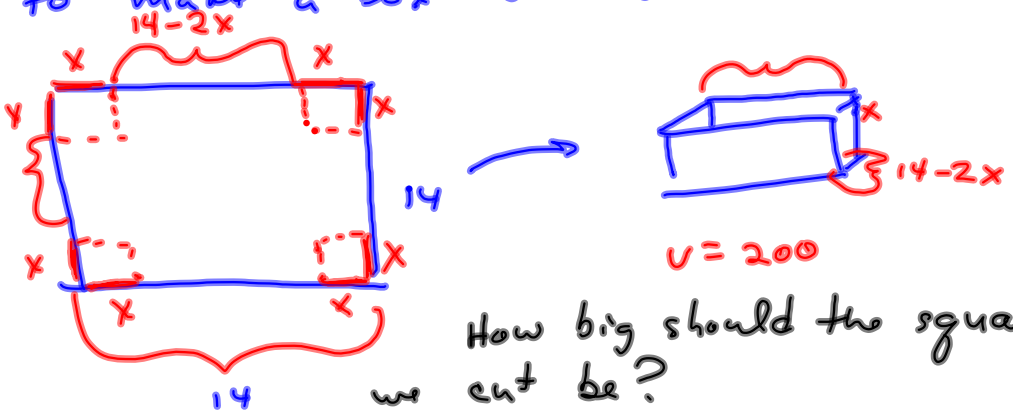
$x \in \{-\frac{1}{2}, \frac{1}{3}\}$

Build-a-question



Volume = $\ell \cdot w \cdot h = 200$ in^3

A 14-inch square piece of cardboard is to have its corners cut out and sides folded to make a box with volume 200 in^3.



How big should the squares we cut be?

Want $V = l \cdot w \cdot h = 200$

$= (14-2x)(14-2x)\,x = 200$

I was shooting for a guacha π

$= (196 - 56x + 4x^2)\,x = 200$

$= 14x^3 - 56x^2 + 196x - 200 = 0$