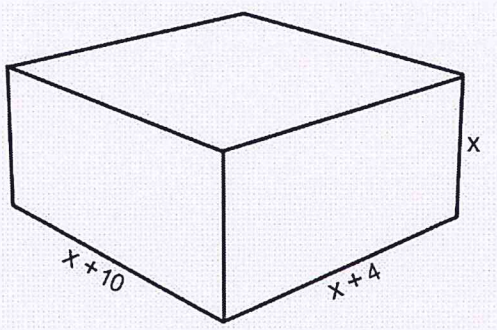
Bellwork Alg 2 Thursday, December 5, 2019

1. Find all real and non-real roots to this polynomial: $y = 3x^4 - 10x^3 + x^2 - 30x - 24$

2. The dimensions of a box are shown.

Find the value of x such that the volume is 25 cm^2.



Bellwork Alg 2 Thursday, December 5, 2019 ANSWERS

1. Find all real and non-real roots to this polynomial: $y = 3x^4 - 10x^3 + x^2 - 30x - 24$

4	3	−10	1	−30	−24
		12	8	36	24
	3	2	9	6	0

$3x^3 + 2x^2 + 9x + 6$

	$3x$	$+2$
x^2	$3x^3$	$+2x^2$
$+3$	$+9x$	$+6$

-OR-

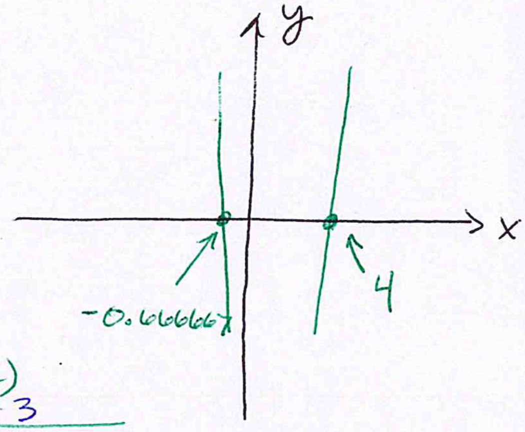
$-0.666667 \rightarrow -2/3$

$= (3x+2)$

$3x+2 \overline{)\, 3x^3 + 2x^2 + 9x + 6}$ quotient $x^2 + 3$

$-(3x^3 + 2x^2)$ → 0, bring down $9x + 6$

$-(9x + 6)$ → 0

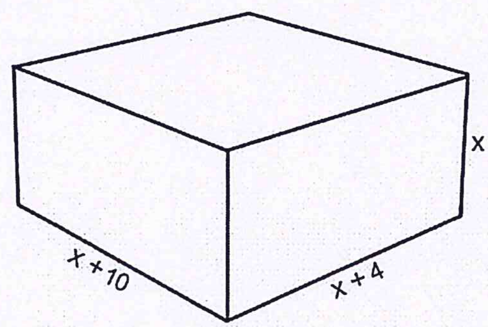


* $3x + 2 = 0$, $x = -2/3$
* $x^2 + 3 = 0$, $x = \pm i\sqrt{3}$

$x = 4, -2/3, \pm i\sqrt{3}$

2. The dimensions of a box are shown.

Find the value of x such that the volume is 25 cm^2.



Volume = L · w · h

$25 = (x+10)(x+4)x$

$(x^2 + 14x + 40)x$

$25 = x^3 + 14x^2 + 40x$

$0 = x^3 + 14x^2 + 40x - 25$

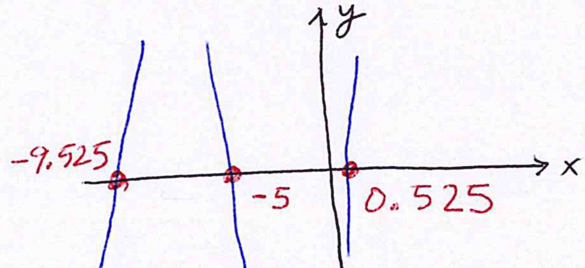
* TRY FACTORING:

	x	$+14$
x^2	x^3	$+14x^2$
$+40$	$+40x$	-25

DOES NOT FACTOR

these don't multiply to −25

* TRY GRAPHING



$x = \cancel{-9.525}, \cancel{-5}, 0.525$

$x = 0.525$ cm