1. First, Check your HW using the solutions

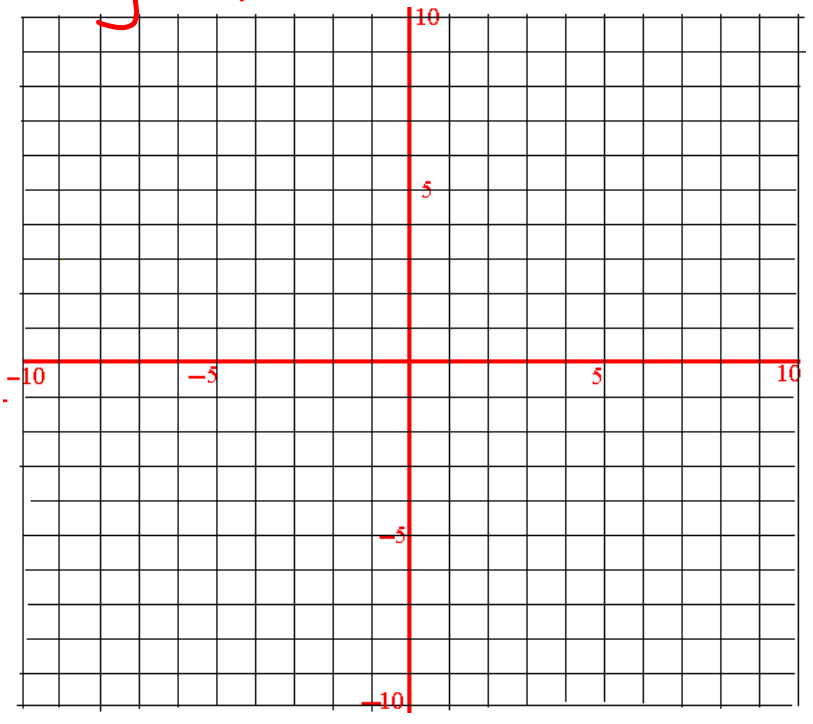
   If questions still linger, use the HW Tally

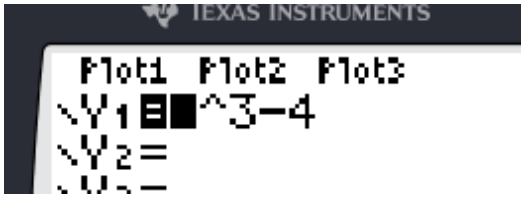
2. Wait to pick up the Warm Up
   until after your HW is turned in.

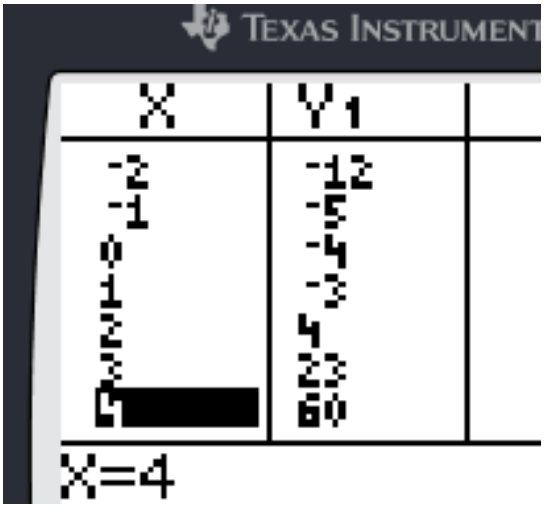
59 $h(x) = x^3 - 4$

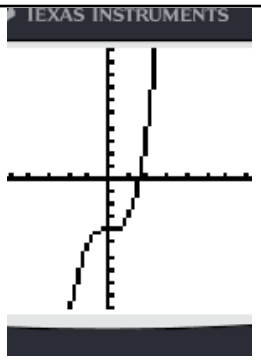
x	y
0	-4
1	-3
-3	-31
-2	-12

$y = x^3 - 4$




TEXAS INSTRUMENTS
Plot1 Plot2 Plot3
\Y1■^3−4
\Y2=


TEXAS INSTRUMENT
X
Y1
-2
-1
0
1
2
3
4
-12
-5
-4
-3
5
23
60
X=4



domain: $\mathbb{R}$

range: $\mathbb{R}$

y-int: $(0,-4)$

x-int: $y = x^3 - 4$

$0 = x^3 - 4$

$\sqrt[3]{\ } \quad \sqrt[3]{\ }$

$4 = x^3$

$\sqrt[3]{4} = x$

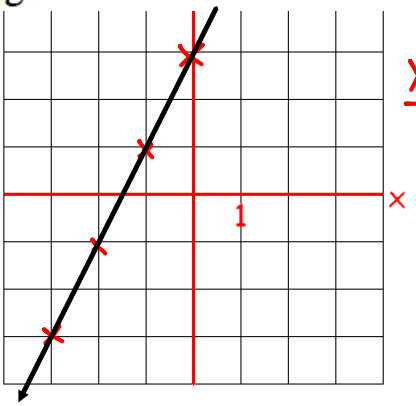
$x \approx 1.59$

Questions on HW ?

1-66. Graph the following functions and find the x- and y-intercepts.

a. $y = 2x + 3$

b. $f(x) = 2x + 3$



x-intercept
(-1.5, 0)

y-int
(0, 3)

c. How are the functions in (a) and (b) the same? How are they different?

same function and graph. just different notation.

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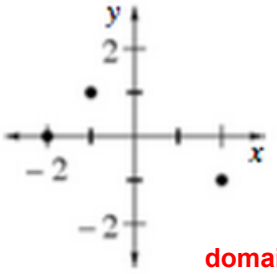
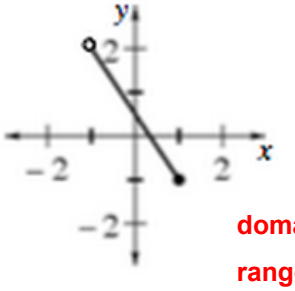
a.



domain $-2, -1, 2$

range $-1, 0, 1$

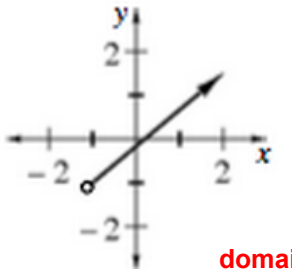
b.



domain $-1 < x \leq 1$

range $-1 < y \leq 2$

c.



domain $x > -1$

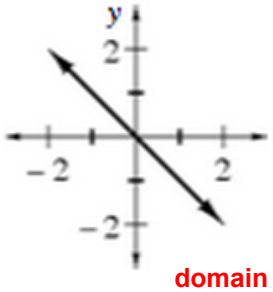
range $y > -1$

Another alternative to indicate x is greater than -1

$-1 < x < \infty$

$-1 \leq y < \infty$

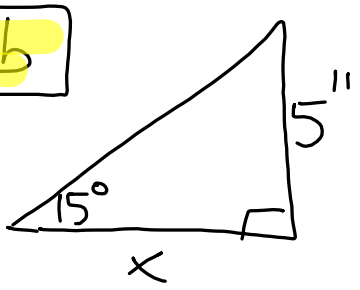
d.



domain $\mathbb{R}$

range $\mathbb{R}$

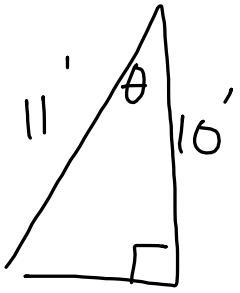
60 b



$\tan 15^\circ = \frac{5}{x}$

$x = \frac{5}{\tan 15^\circ}$

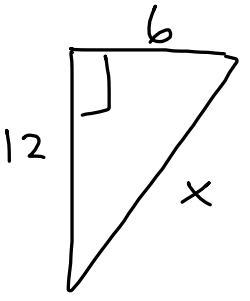
60c



$\cos\theta = \frac{10}{11}$

$\theta = \cos^{-1}\left(\frac{10}{11}\right)$

60d

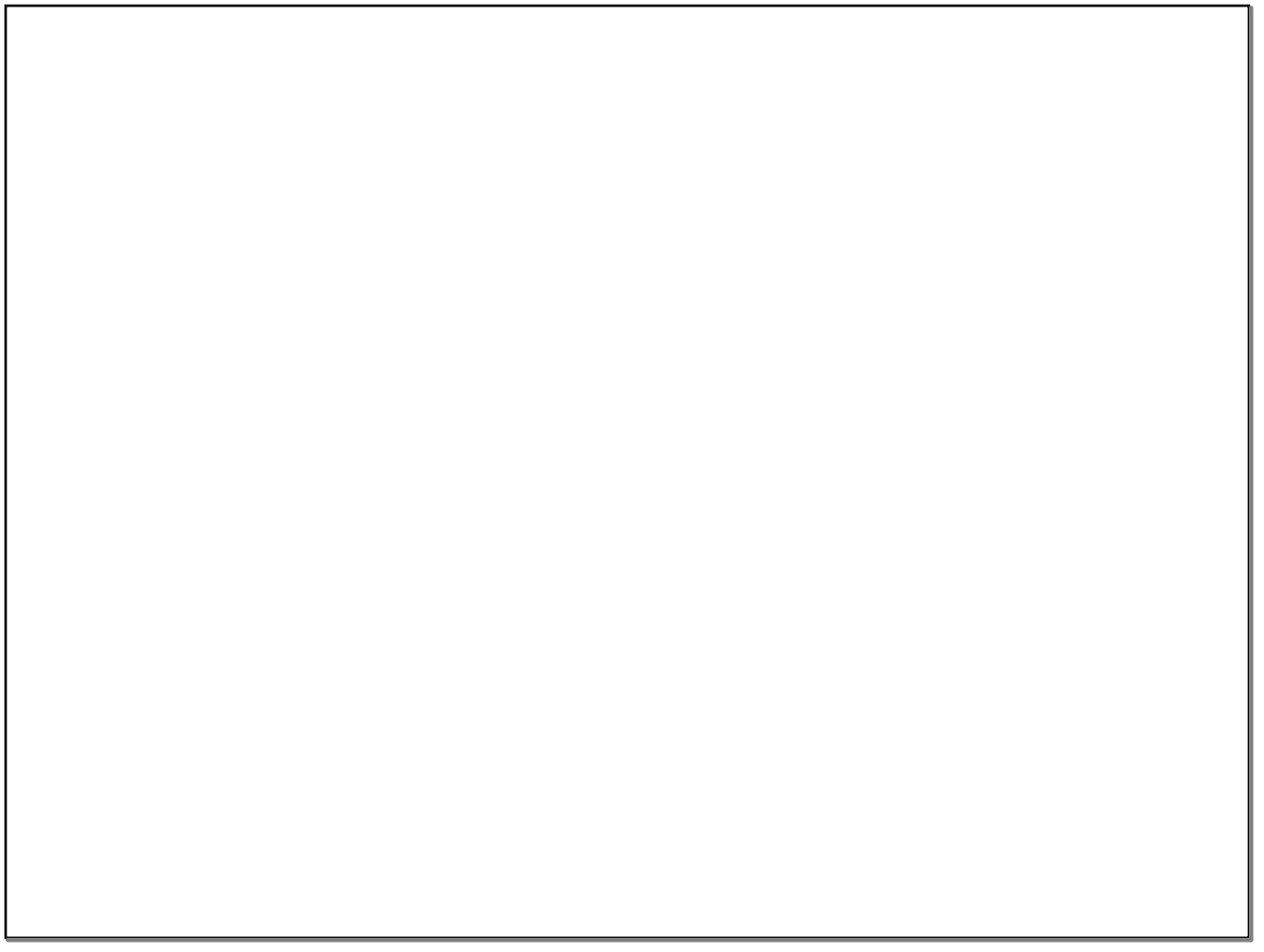


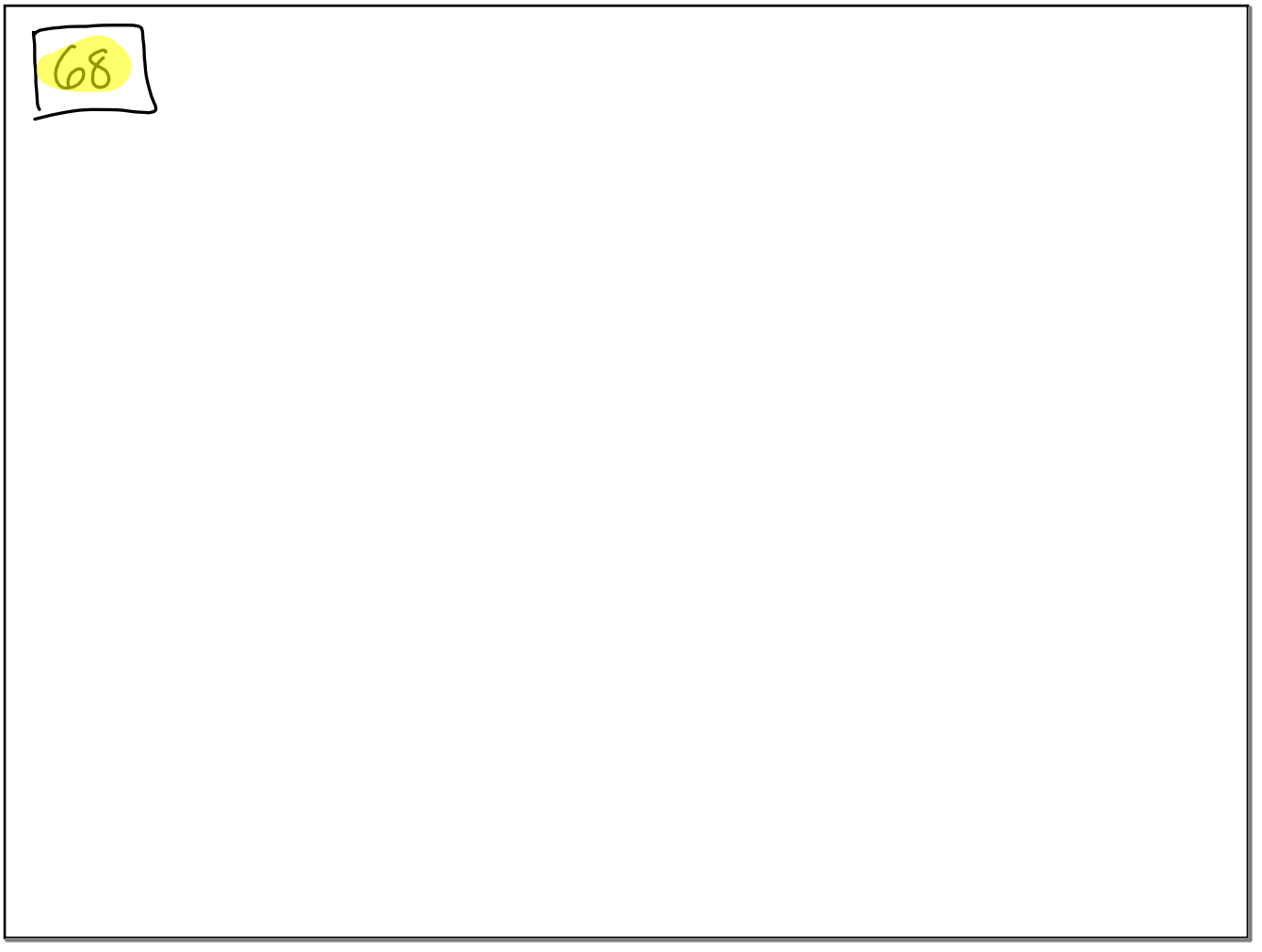
$a^2 + b^2 = c^2$

65

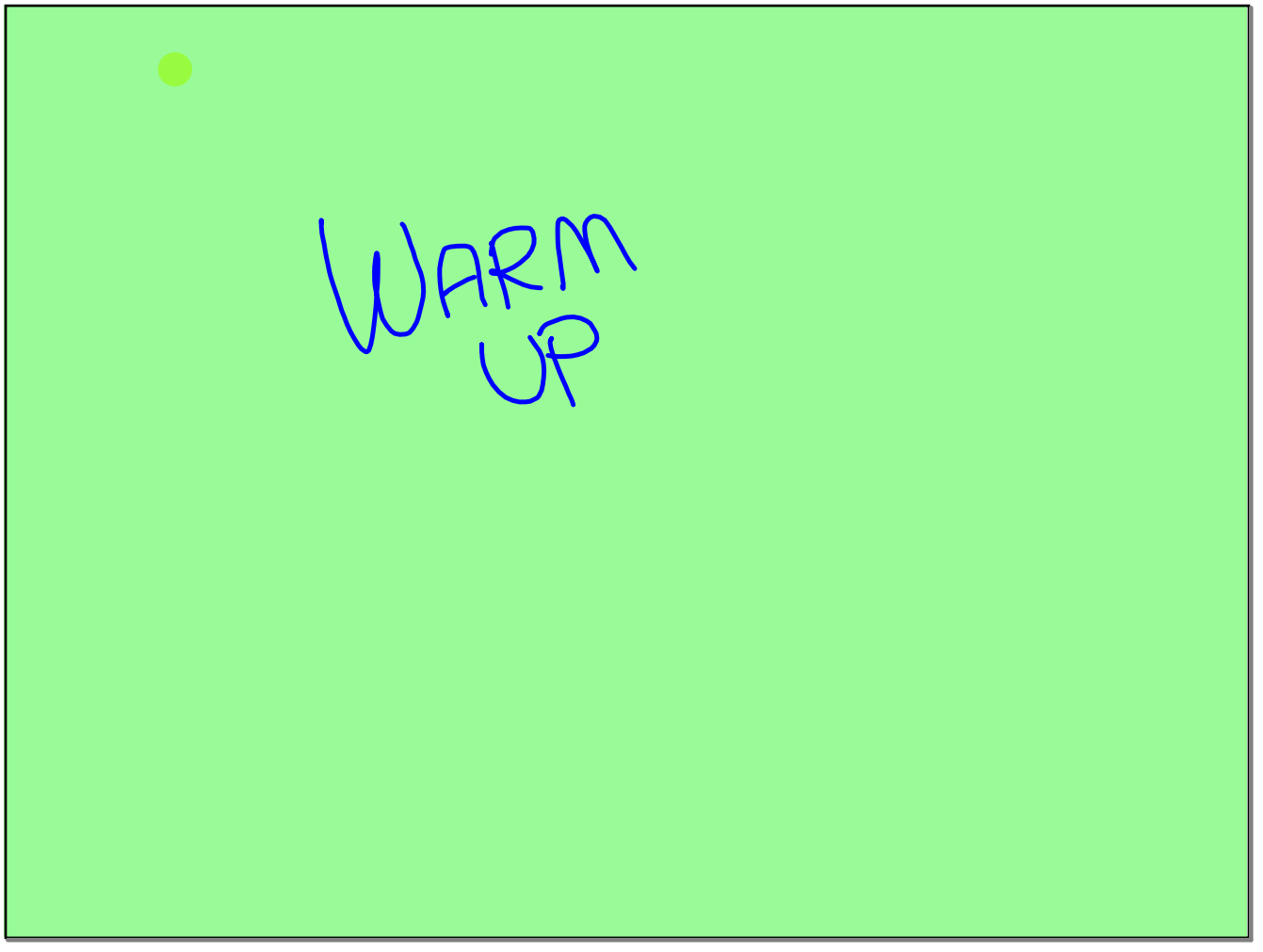
$f(x) = \frac{1}{x-2}$

(a) $f(2.5) =$




68

69


WARM
UP

Warm Up

1.2.1_Day 2

Multiply the following polynomial factors:

a monomial times a binomial

$x(x-7)$ x^2-7x

a monomial times a binomial

$2y^2(5y+4)$

$10y^3+8y^2$

a binomial times a binomial

$(z + 2)(10z - 1)$

$10z^2 - z + 20z - 2$

$10z^2 + 19z - 2$

a monomial times a binomial times a binomial

$3x(x-1)(2-x)$

$(3x^2-3x)(2-x)$

$6x^2-3x^3-6x+3x^2$

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

$3x(x-1)(2-x)$

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

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

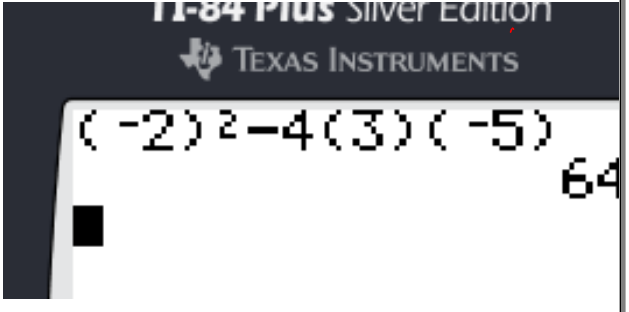
$-3x^3+9x^2-6x$

6 Hopefully you have already either written or pasted into your Algebra log, the Quadratic Formula. Use it to solve the following quadratic equation.

$3x^2 - 2x - 5 = 0$

$a = 3 \quad b = -2 \quad c = -5$

$$x = \frac{-(\ ) \pm \sqrt{(\ )^2 - 4(\ )(\ )}}{2(\ )} = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(3)(-5)}}{2(3)}$$



⑤ $3x^2 - 2x - 5 = 0$ $a = 3$ $b = -2$ $c = -5$

$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(3)(-5)}}{2(3)} = \frac{2 \pm \sqrt{64}}{6} = \frac{2 \pm 8}{6}$$

$\therefore x = \frac{2+8}{6}$ and $x = \frac{2-8}{6}$

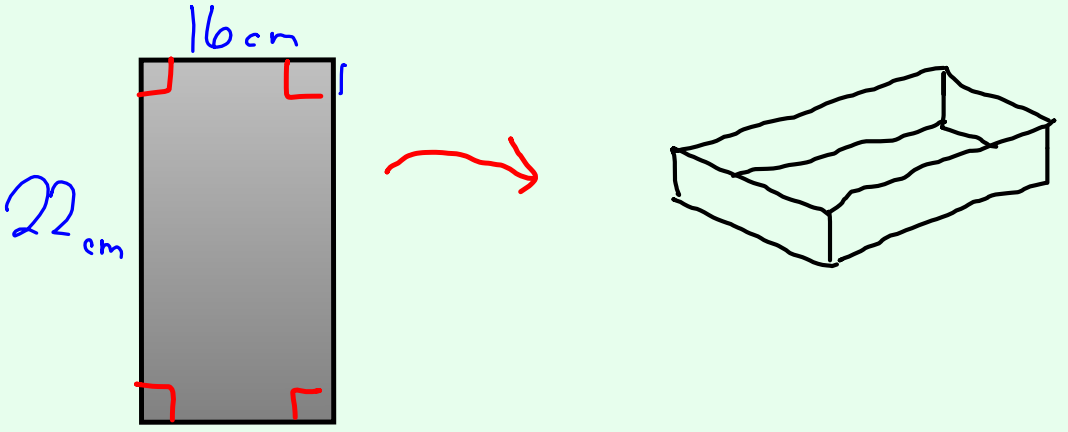
$= \frac{10}{6}$ $x = \frac{-6}{6}$

$= \frac{5}{3}$ $= -1$

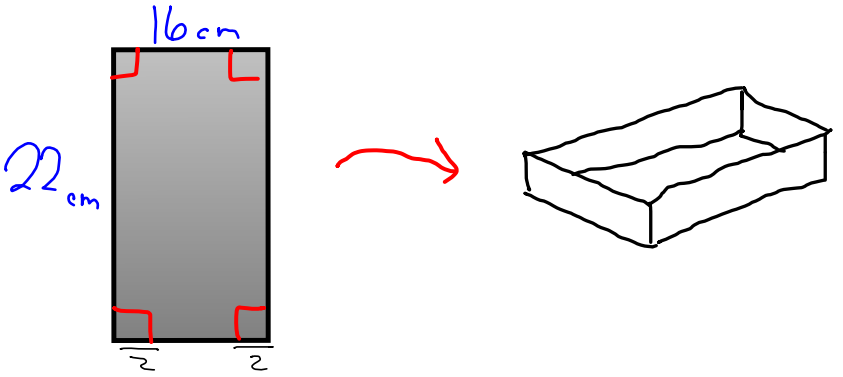
Started Yesterday : The Box Problem

To create a function that models a geometric situation.

Designing an open top box, starting from a flat rectangular piece of metal.

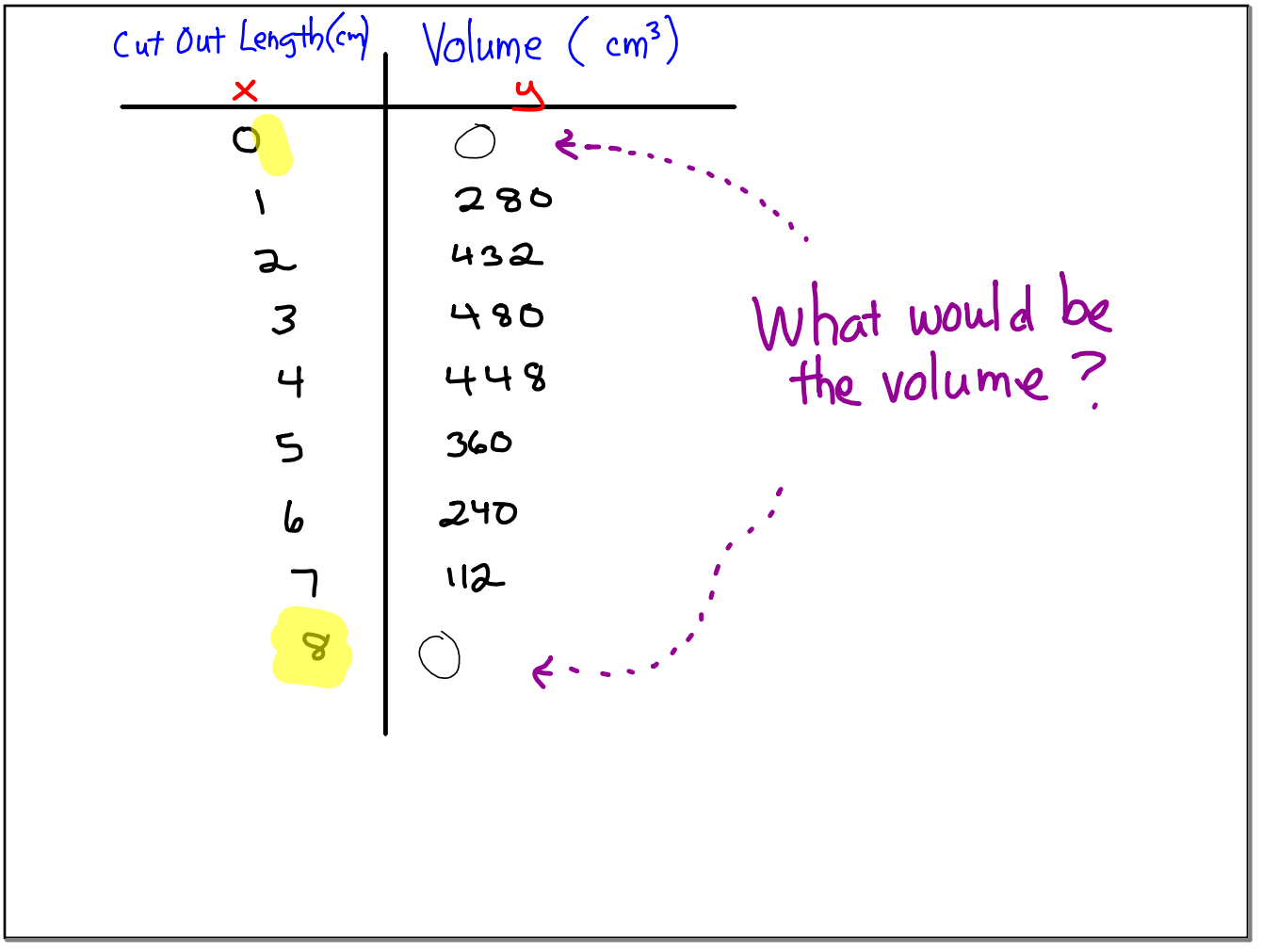


What should the <u>height</u> of the finished box be in order to maximize the volume ????



What is the largest cutout size possible?

therefore, the largest possible height is 8 cm

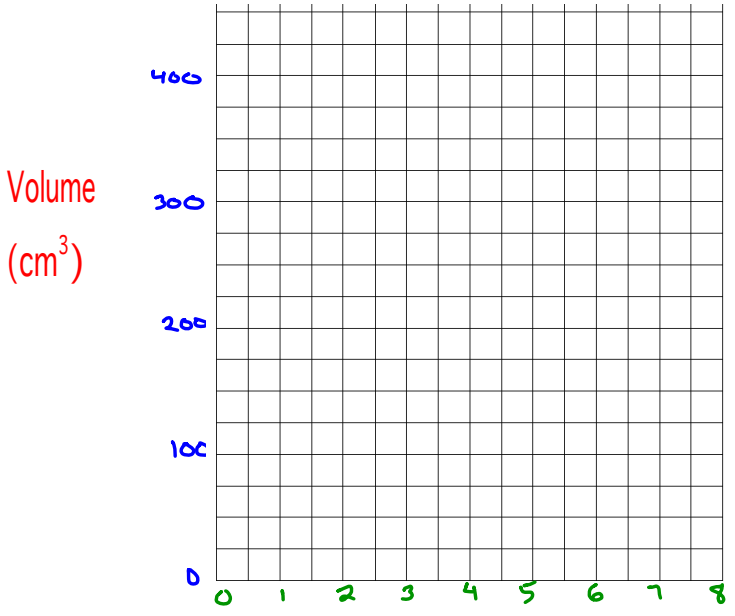

Cut Out Length(cm)
x
Volume (cm³)
y
0
1
2
3
4
5
6
7
8
280
432
480
448
360
240
112
What would be the volume?

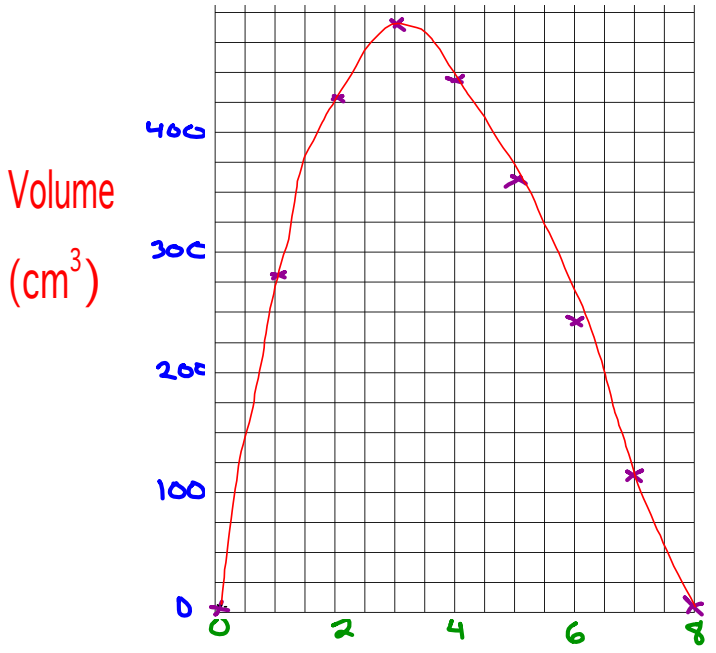
Cut Out Length (cm) x	Volume (cm^3) y
0	0
1	280
2	432
3	480
4	448
5	360
6	240
7	112
8	0

So what would the graph of the Volumes vs Cut out size look like ?

Next step:

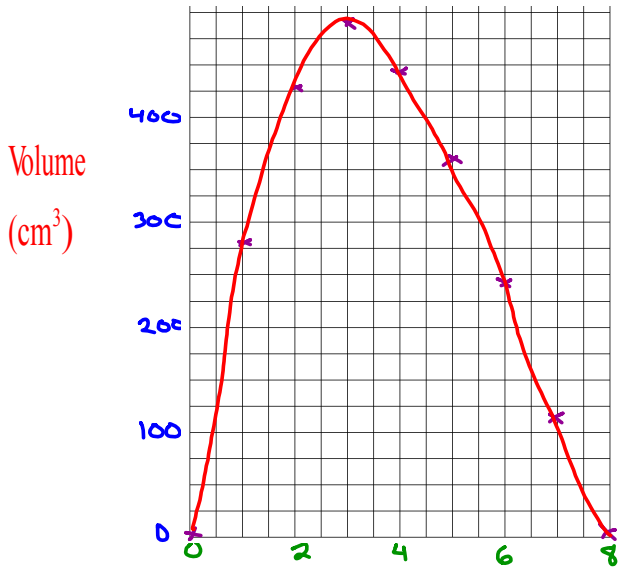
Next to your table, set up a graph and plot the points


Volume
(cm3)
400
300
200
100
0
0 1 2 3 4 5 6 7 8
cut out size or height
(in cm)



Does it make sense to make the graph continuous?

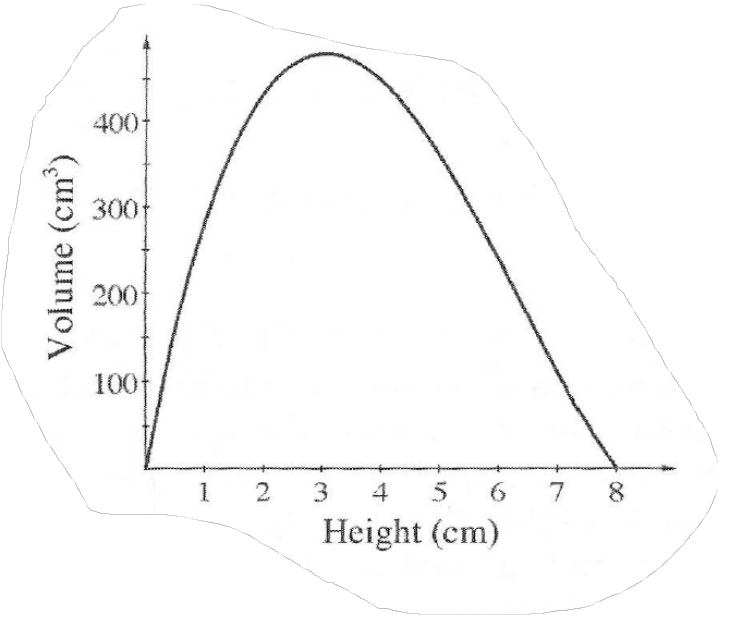
cut out size (height) in cm



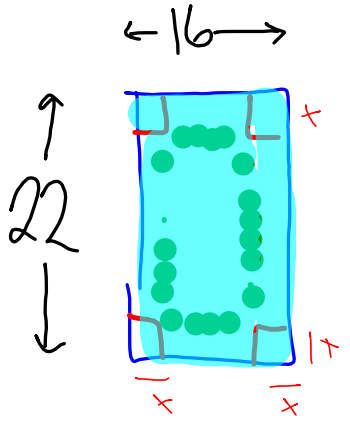
Does it make sense to make the graph continuous?

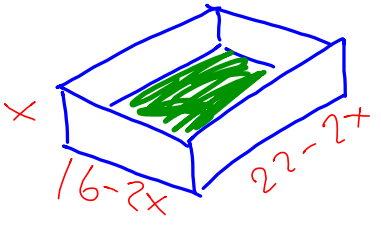
cut out size (height) in cm

here is what part of the graph of the volume function actually looks like.



Add the three dimensions to the box





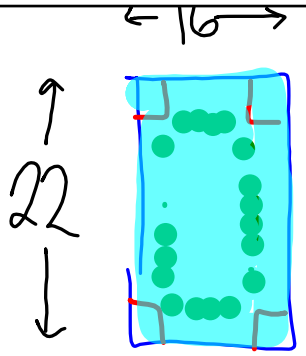
$V = l \cdot w \cdot h$

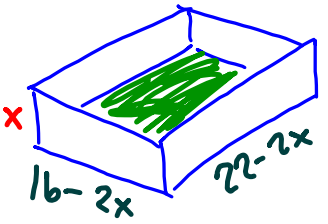
$= x(16-2x)(22-2x)$

$= (16x - 2x^2)(22-2x)$

$= 4x^3 - 76x^2 + 352x$

	22	$-2x$
$16x$	$352x$	$-32x^2$
$-2x^2$	$-44x^2$	$4x^3$

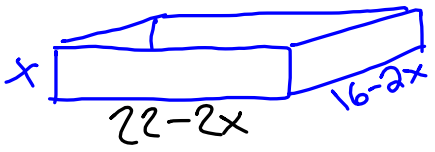


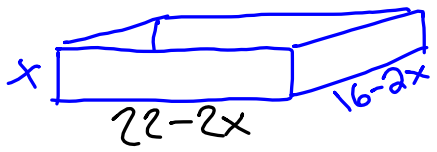


height • width • length

$V(x) =$

With your team, calculate the volume of the box





$V = x(22-2x)(16-2x)$

$= x[4x^2 - 76x + 352]$

$= 4x^3 - 76x^2 + 352x$

or

$V = x(22-2x)(16-2x)$

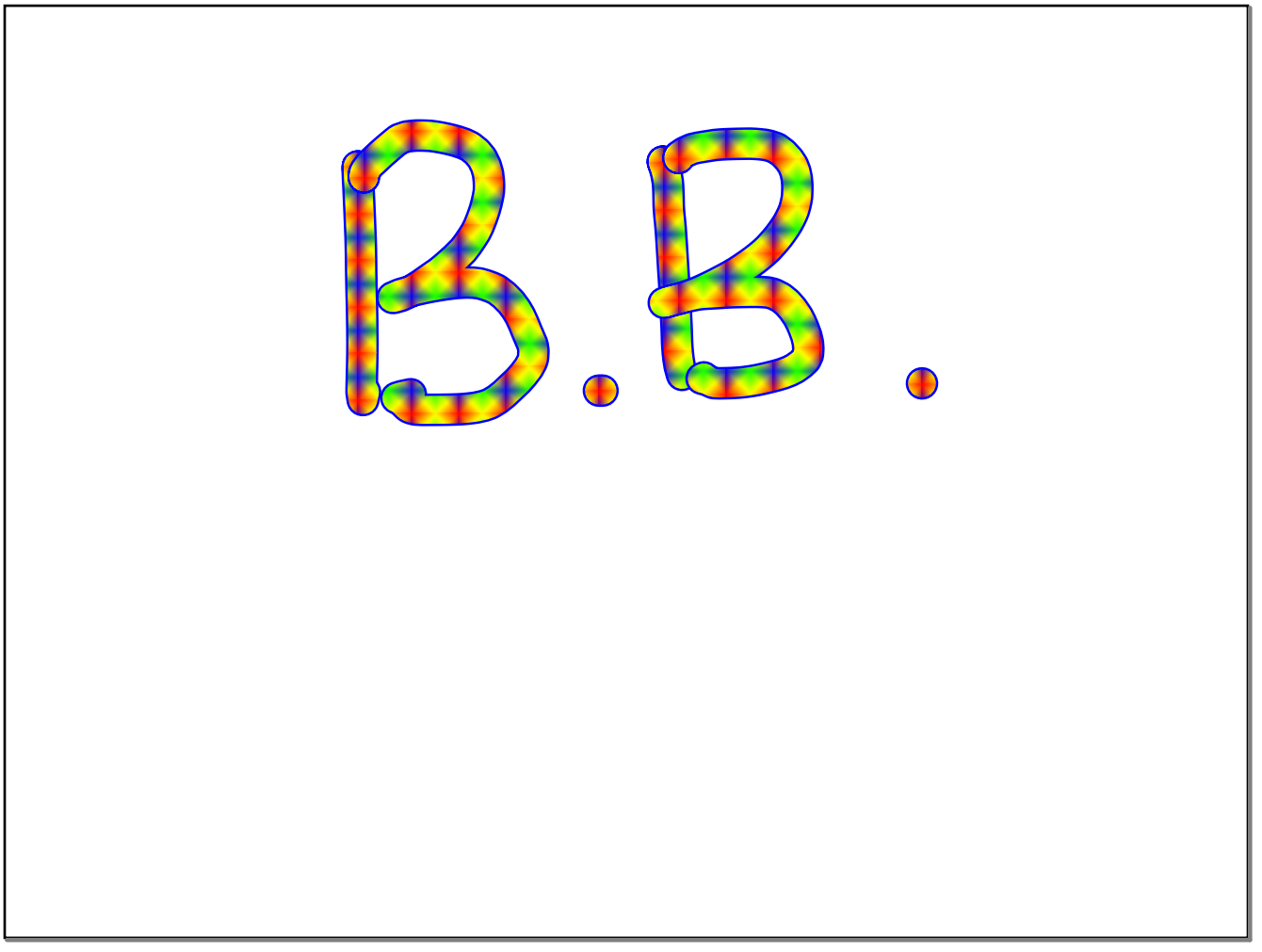
$= (22x - 2x^2)(16-2x)$

$= 352x - 44x^2 + 32x^2 + 4x^3$

$= 4x^3 - 76x^2 + 352x$

graphingusingtheGDC

max volume is $480.1\ cm^3$
when cut out size 3.05 cm


B.B.

We learn from mistakes.

So, mistakes on homework and small hCQ's are not a bad thing as long as...

In a moment, I'll give each group a copy of the solutions.

No cell phones out

If you have not taken it, let me know now.

Confusion about $\sqrt{}$

$\sqrt{16}$

$\sqrt{x^2} = \sqrt{25}$

$x = \pm 5$

Solutions to equations

$\frac{18}{2} = \frac{2x}{2}$

$9 = x$

$x = 9$

Same with writing functions

$f(x) = 2x^2 - 3x + 2$ ~~$f(x)$~~

Exact Answers

$(\quad X \quad) = 0$

$\downarrow$

$3x - 5 = 0$

$3x = 5$

$x = \frac{5}{3}$

$\frac{5}{2} =$

NOT 1.67

$1.\overline{6}$

Assignment: 1...70-72, 76-77

The Ch. 1 test will tentatively be on:

Thur Feb 1