

Now complete pp.146-148 #1, 2a, 4b, 6be, 8ab, 9ab, 10d, 13a, 16*

* for 16b you will need to use **desmos**

A formative assessment of Topics 1, 2 and 3 is next class.

p.147

8. Sketch an example of a quartic function with the given zeros, and write the equation of the function. Then write the equations of two other functions that belong to the same family.
- a) $-5, -3, 2, 4$
- b) -2 (order 2), 3 (order 2)

13. a) Determine the quadratic function that has zeros at -3 and -5 , if $f(7) = -720$.

16. Square corners cut from a 30 cm by 20 cm piece of cardboard create a box when the 4 remaining tabs are folded upwards. The volume of the box is $V(x) = x(30 - 2x)(20 - 2x)$, where x represents the height.
- Calculate the volume of a box with a height of 2 cm.
 - Calculate the dimensions of a box with a volume of 1000 cm^3 .
 - Solve $V(x) > 0$, and discuss the meaning of your solution in the context of the question.
 - State the restrictions in the context of the question.

$$\begin{aligned} a) V(2) &= (2)(30-2(2))(20-2(2)) \\ &= 2(26)(16) \\ &= 832 \text{ cm}^3 \end{aligned}$$

$$b) V(x) = 1000$$

$$1000 = x(30-2x)(20-2x)$$

$$0 = x(30-2x)(20-2x) - 1000$$





3.4 Transformations of Cubic and Quartic Functions

Math Learning Target:

"I can describe and perform transformations on the parent functions $y = x^3$ and $y = x^4$."

Recall: $y=f(x)$ may be transformed to $y=af[k(x-d)]+c$

Last class we learned how to sketch polynomial functions in **factored form**.

However, if the polynomial function is in the form $y=a[k(x-d)]^n+c$, where $a \neq 0, c \neq 0, k \neq 0$, then it should be graphed by identifying and applying the transformations of the polynomial function $f(x)=x^n$, where n is a nonnegative integer.

Today: Graphing $y=a[k(x-d)]^3+c$ and $y=a[k(x-d)]^4+c$

Ex.1

On the same plane, graph:

a) $y = x^3$

b) $y = -(\frac{1}{2}x - 1)^3$

$= -(\frac{1}{2}(x-2))^3$

R reflection in the x-axis

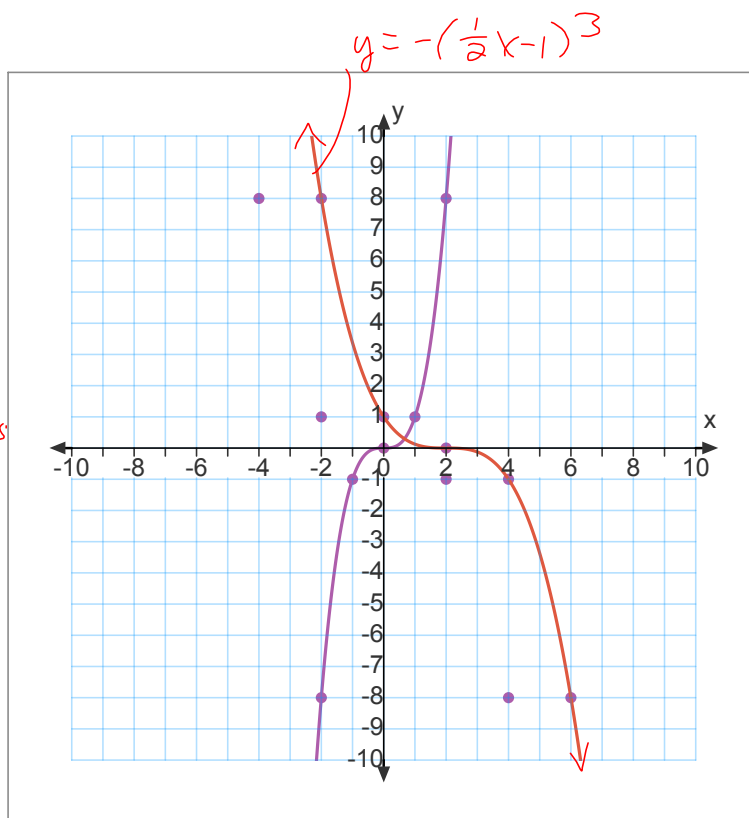
S h.s. by a factor of 2

T h.t. 2 units to the right

NOTE:

$y = -(\frac{1}{2}(x-2))^3$

is NOT the same as $y = -\frac{1}{2}(x-2)^3$



Complete pp.155-158 #1, 2*, 3ab, 4bd, 5a, 6ab, 8**, 9af (for #9 see Ex. 2 on p.153), 10, 14

*2e has an incorrect answer in the back: change "left" to "right"

*2f has an incorrect answer: ...horizontal translation 35 units left...

**8 has an incorrect answer: it should be $(-2, -8); (0, 0)$ then $(2, 8)$