

Before we begin, are there any questions from last day's work?

Now Read pp.209-211 (Ex. 1-3)

Then complete:

1) 2.6.3

2) pp.212-214 #8, 10, 14bcd, 16, 17(a-d)

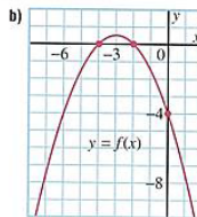
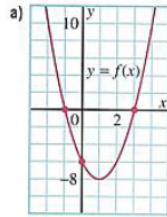
Today's Learning Goal(s): bc

By the end of the class, I will be able to:

- a) solve polynomial equations graphically, both with **and without** technology.

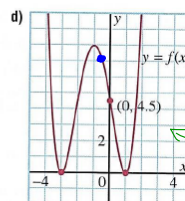
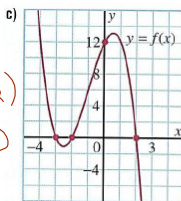
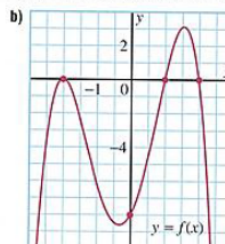
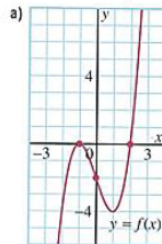
p.212 #10

10. Determine the equation of each quadratic function.



p.214 #17

17. Determine <sup>the</sup> equation to represent the graph of each polynomial function.



use (0, 12)  
(x, y)

Zeros: -3 1  
Order: 2 2

Zeros: -3 -2 2  
Order: 1 1 1

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

$$12 = a(0+3)(0+2)(0-2)$$

$$12 = a(3)(2)(-2)$$

$$12 = -12a$$

$$\therefore a = -1$$

$\therefore y = -1(x+3)(x+2)(x-2)$   
is the equation.

$$y = a(x+3)^2(x-1)^2$$

$$4.5 = a(0+3)^2(0-1)^2$$

$$4.5 = a(3)^2(-1)^2$$

$$= a(9)(1)$$

$$4.5 = 9a$$

$$\frac{4.5}{9} = a$$

$$a = \frac{1}{2}$$

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

2.7.1: Solving Polynomial *Equations* Graphically

(using the corresponding polynomial function)

Date: Oct 3/18

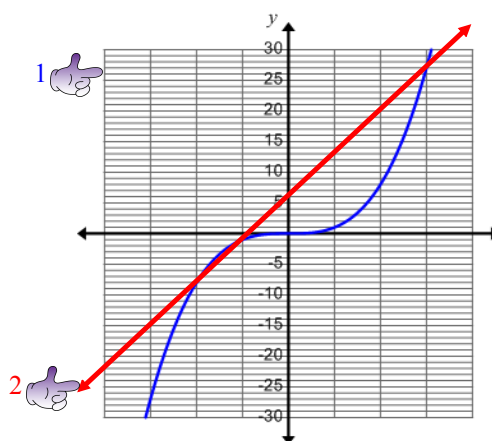
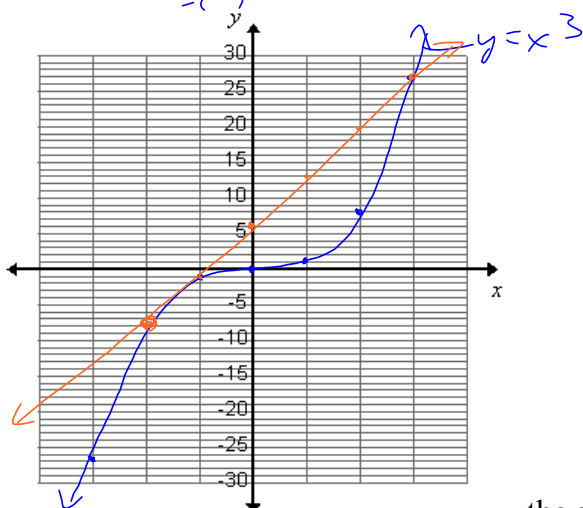
Recall: Solving an equation means determining the value(s) of the variable which make(s) the equation true. When solving graphically, the values of the points of intersection are the roots (solutions) to the original problem.

Ex. 1 Given  $x^3 = 7x + 6$ . Solve graphically.

Method 1: Let  $y_1 = x^3$  and  $y_2 = 7x + 6$ , and graph on the same grid.

DESMOS 4C 2.7.1 Lesson Methods 1 &amp; 2

Click for answer:



$\therefore$  the solutions are  $x = -2$ ,  $x = -1$ , and  $x = 3$

Note: There is more than one choice when splitting the equation

We may have also chosen:

(Next page)

$$x^3 = 7x + 6$$

$$x^3 - 6 = 7x$$

$$y_1 = x^3 - 6, y_2 = 7x$$

Method 2:

DESMOS 4C 2.7.1 Lesson Methods 1 & 2

Rearrange the equation to make one graph.

The zeros of the function are the roots (solutions) of the original equation.

$$x^3 = 7x + 6$$

$$x^3 - 7x - 6 = 0$$

$$\therefore y = x^3 - 7x - 6$$

We'll use **desmos** to graph our new function, then find the zeros.

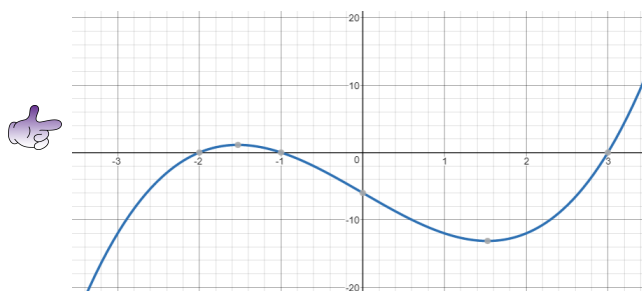
Use Window settings:

X-Axis

$$-4 \leq x \leq 4$$

Y-Axis

$$-30 \leq y \leq 30$$



Pull

$\therefore$  the zeros of the function  $y = x^3 - 7x - 6$  are:

$$x = -2, x = -1, \text{ and } x = 3$$

Today's homework:

pp.217-218 1, 2c, 3d, 4b, 6, 7

*Simple Summary*

