

### 3.2 Polynomial Functions Apr 25 sub.notebook



**3.2 Polynomial Functions**

Ex.) Describe the graph of  $f(x) = x^2 - 13x + 40$ .

- type of graph? quadratic  $\rightarrow x^2$  is the highest power.
- y int = 40 (0,40) constant term is 40 (no variable)
- x int?
  - graphing (5,0) (8,0)
  - quadratic formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
  - factor  $(x-5)(x-8) = 0$   
 $x = 5 \quad x = 8$
- turning points? one vertex (6.5, -22.5)  
min or max
- end behavior?  $\text{II} \rightarrow \text{I}$

Apr 20-10:47 AM

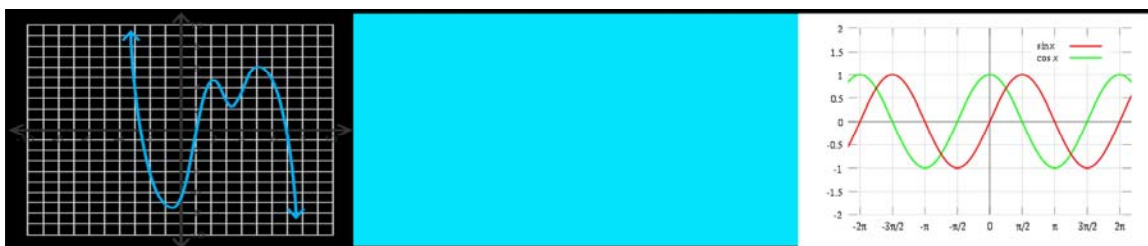


**Degree 2 Graphs**

# of x int? 2	1	0
# of y int 1	1	1
turning pts 1	1	1
Domain/Range $x \in \mathbb{R}, y \geq -3, x \in \mathbb{R}$	$y \leq 0$	$x \in \mathbb{R}, y \leq -2$
End behavior $\text{II} \rightarrow \text{I}$	$\text{III} \rightarrow \text{IV}$	$\text{III} \rightarrow \text{IV}$

Apr 20-10:58 AM

### 3.2 Polynomial Functions Apr 25 sub.notebook



Degree 3 Graphs (cubic graphs)

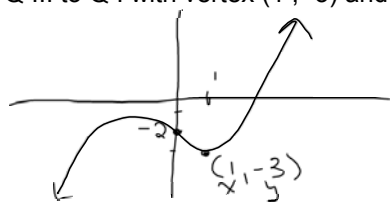
# of x-int	2	3	1
# of y-int	1	1	1
turning pts	2	2	0
D and R	$x \in \mathbb{R} \quad y \in \mathbb{R}$	$x \in \mathbb{R} \quad y \in \mathbb{R}$	$x \in \mathbb{R} \quad y \in \mathbb{R}$
End behavior	3 to 1	3 to 1	2 to 4

Apr 20-10:59 AM

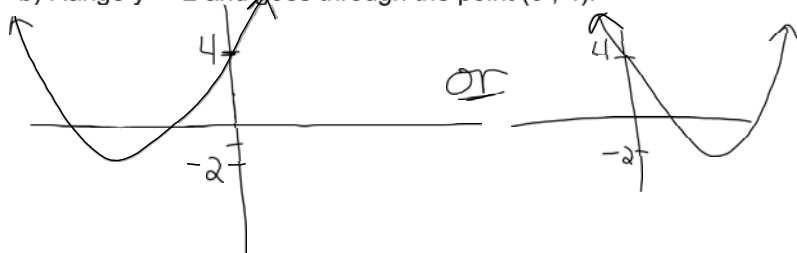


Ex.) Sketch the graph of a possible polynomial functions meeting the given requirements.

a) Q III to Q I with vertex  $(1, -3)$  and y-int  $(0, -2)$ .



b) Range  $y \geq -2$  and goes through the point  $(0, 4)$ .

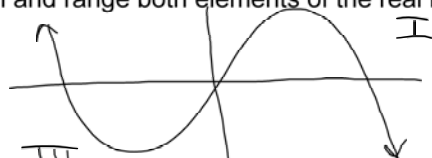


Apr 20-10:59 AM

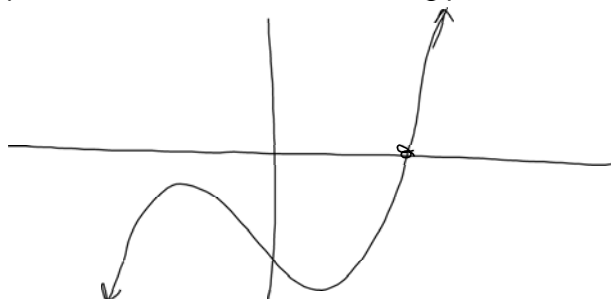
### 3.2 Polynomial Functions Apr 25 sub.notebook



c) Domain and range both elements of the real numbers and turning points in Q III and Q I.



d) End behaviour; Q III to Q I, 2 turning points, and one x-intercept.



Apr 20-11:01 AM



Ex.) Write an equation of a possible polynomial function with:

a) Degree 2, turning point a maximum, constant term is -6.

$$y = -x^2 - 6 \qquad y = -(x-3)(x+2)$$

b) Degree 1, positive leading coefficient, constant term of 10.

$$y = x + 10$$

or

$$y = 3x + 10$$

Pg. 287 # 1, 3, 4, 5(no calc),  
6-8, 10.

Apr 20-11:02 AM