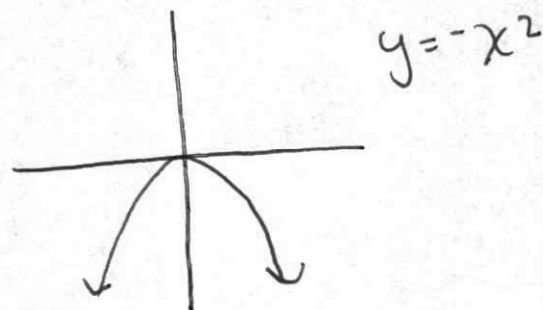
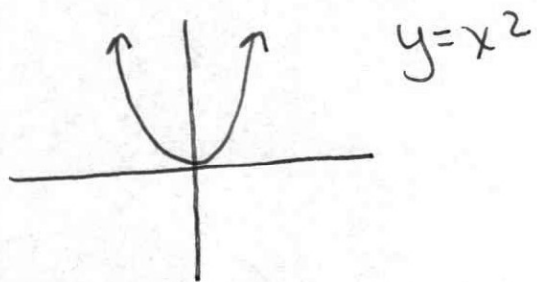


Key  
4/27/20

# Quadratic Functions

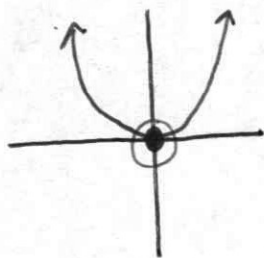


Parabola - shape of graph

Parent graph -  $y = x^2$

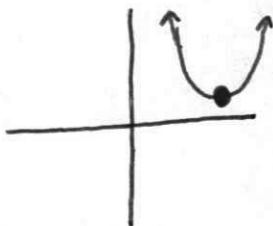
Vertex - the point where the graph changes direction

X-int - point(s) where the parabola crosses the x-axis  
aka (zeros, roots, solutions)

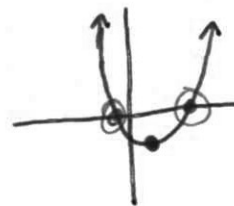


V: (0,0)

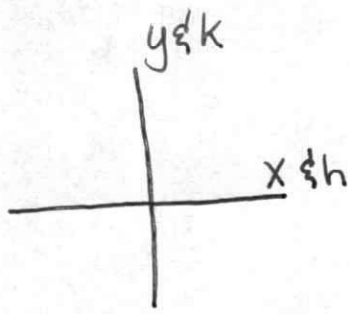
X-int - has 1 at  
(0,0)



V:  
X-int - none



V:  
X-int - has 2



Vertex

$(h, k)$

$(x, y)$

Axis of Symmetry (AoS)

Domain

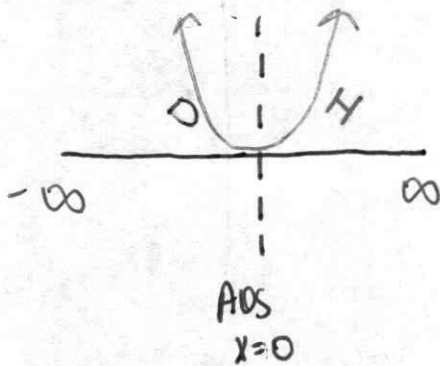
Interval of Increase

Interval of Decrease

Extrema

max / min

range



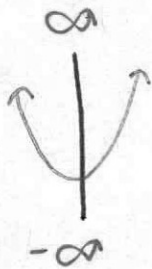
Domain: all possible  $x$  values  
Always  $(-\infty, \infty)$  or  $\mathbb{R}$

Axis of symmetry: Cuts graph in half  
 $x = \#$

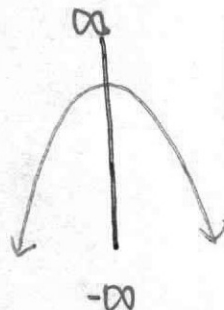
Interval of increase: Always look left to right:  $\#$  is the AoS  
 $(0, \infty)$

Interval of Decrease: Same rules as Int. of Inc  
 $(-\infty, 0)$

# y Value of Vertex!



Example vertex (0,0)



Extrema:

Range:  $(0, \infty)$

↙ ↘  
bottom top

Extrema: min

Range: All possible y values

Always Bottom to top

Max: top  
(frown)  
min: bottom  
(smile)

Range:  $(-\infty, 0)$

↙ ↘  
bottom top

Extrema: Max