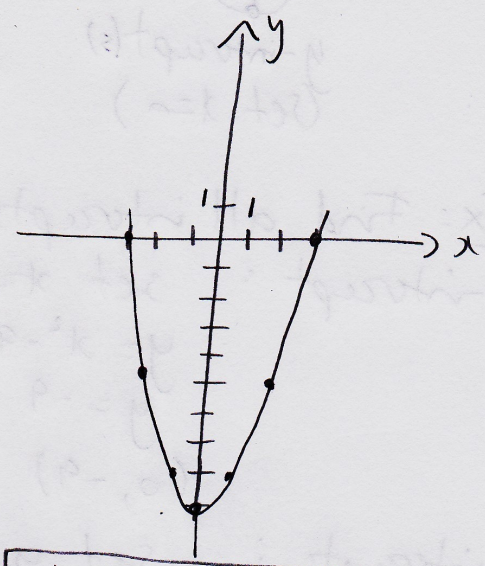
2.2 Graphs and Intercepts

Ex: Graph $y = x^2 - 9$

x	$y = x^2 - 9$
-3	$(-3)^2 - 9 = 0$
-2	-5
-1	-8
0	-9
1	-8
2	-5
3	0



Label Axes
Indicate Scale

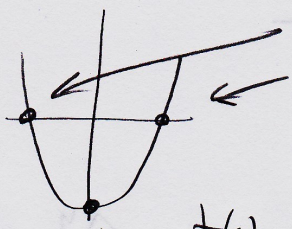
Ex: Is $(4, 7)$ on the graph?

Sub into $y = x^2 - 9$

$7 = 4^2 - 9$ ✓ **Yes**

Is $(5, 10)$ on the graph?

$10 \neq 5^2 - 9$ **No**



Ex: Find all intercepts for $y = x^2 - 9$

y-intercept: set $x = 0$

$y = x^2 - 9$

$y = -9$

$(0, -9)$

x-intercepts: set $y = 0$

$y = x^2 - 9$

$0 = x^2 - 9$

$0 = (x - 3)(x + 3)$

$x = \pm 3$

$(3, 0)$ and $(-3, 0)$

Ex: Find all intercepts and graph

$y = 6 + x - x^2$

y-intercept: set $x = 0$

$y = 6$

$(0, 6)$

x-intercepts: set $y = 0$

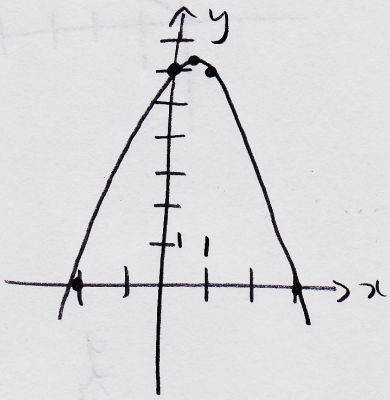
$0 = 6 + x - x^2$

$0 = -(x^2 - x - 6)$

$0 = -(x-3)(x+2)$

$x = 3, -2$

$(3,0)$ and $(-2,0)$

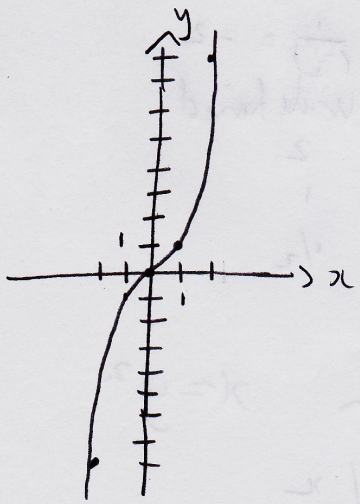


Can add more points

x	$y = 6 + x - x^2$
0.5	6.25
1	6

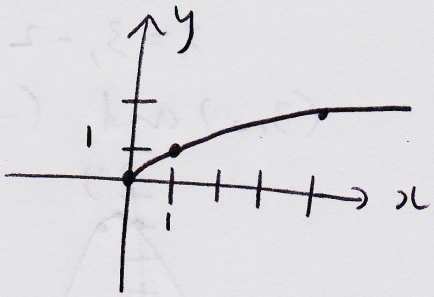
Ex: Graph $y = x^3$

x	y
-2	-8
-1	-1
0	0
1	1
2	8



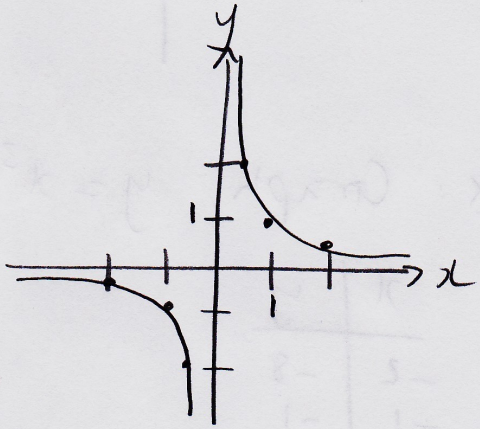
Ex: Graph $y = \sqrt{x}$

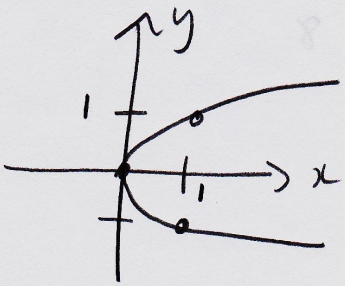
x	y
negative	undefined
0	0
1	1
4	2



Ex: Graph $y = \frac{1}{x}$

x	y
-2	$-1/2$
-1	-1
$-1/2$	$\frac{1}{(-\frac{1}{2})} = -2$
0	undefined
$1/2$	2
1	1
2	$1/2$



Ex: Graph $x = y^2$

y	x
-1	1
0	0
1	1