

Exercise 1, 2, 25 Consider  $y = -x^2 + 4$ . Find the intercepts and graph by plotting points.

Solution

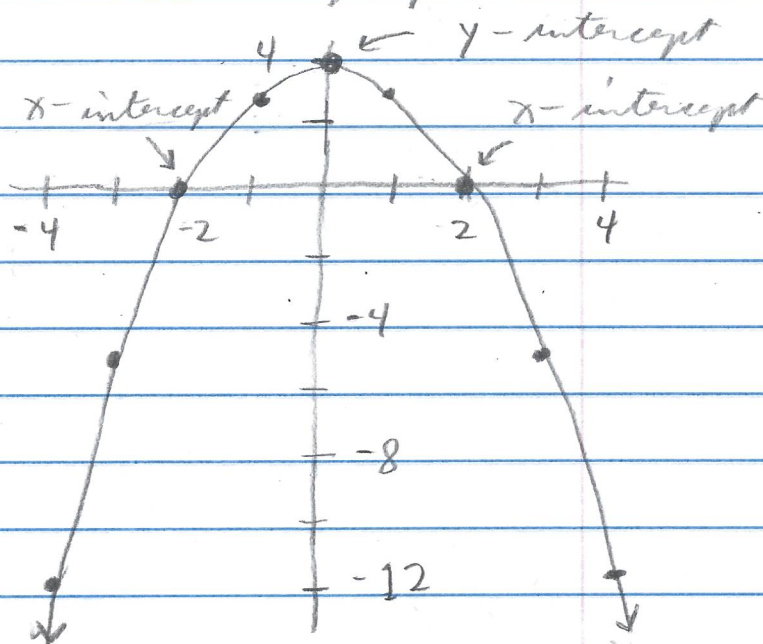
To find the  $x$ -intercepts, we set  $y = 0$  and consider  $y = -x^2 + 4 = 0$ . This gives  $-x^2 = -4$  or  $x^2 = 4$ . So  $\sqrt{x^2} = \sqrt{4}$  or  $|x| = 2$  or  $x = \pm 2$ , so the  $x$ -intercepts are  $(-2, 0)$  and  $(2, 0)$ .

To find the  $y$ -intercept, we set  $x = 0$  and consider  $y = -x^2 + 4 = -(0)^2 + 4 = 4$ . So the  $y$ -intercept is  $(0, 4)$ .

Some additional points on the graph are:

$x$	$y = -x^2 + 4$
-4	$-(-4)^2 + 4 = -12$
-3	$-(-3)^2 + 4 = -5$
-1	$-(-1)^2 + 4 = 3$
1	$-(1)^2 + 4 = 3$
3	$-(3)^2 + 4 = -5$
4	$-(4)^2 + 4 = -12$

So the graph is



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