

P-17 We now will study the function of x given by the equation

$$y = x^2$$

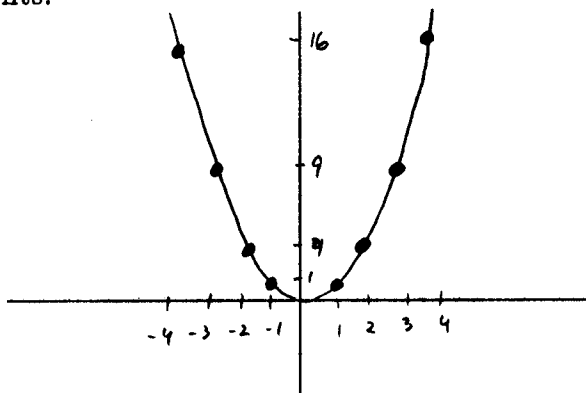
where x^2 , read as " x squared," means " x times x " so that $x^2 = x \cdot x$.

1. Complete the table below by finding the y -value for each given x -value. For example, when $x = 3$ the y -value is $y = (3)^2 = 9$ and that value appears in the table under the x -value of 3.

x	-4	-3	-2	-1	0	1	2	3	4
y	16	9	4	1	0	1	4	9	16

Are all the y -values in your table ≥ 0 ? yes Is it true that for any x -value at all the y -value would be ≥ 0 ? yes How many x -values will give you a y -value of 0? one In your table did you get the same y -value for both $x = 3$ and $x = -3$? yes Is it true that for every pair of $+$ and $-$ x -values, x and $-x$, you will get the same y -value? yes

2. Plot the nine pairs of (x, y) values from your table in Problem 1. Draw a smooth curve through your points.



3. The points that you plotted all lie on the geometric figure called a (circle one):

circle

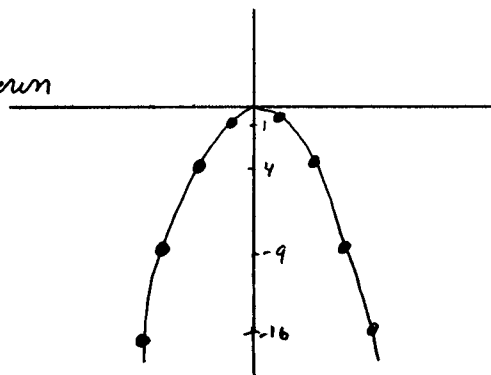
square

line

parabola

4. Does your graph of $y = x^2$ have a *bottom-most* point? yes Does the y -axis pass through this point? yes If you were to fold the graph along the y -axis, would the two halves of your sketch exactly match up? yes

5. Using the table of values from Problem 1, graph the function $y = -(x^2)$. How is your new graph related to your graph in Problem 2? upside down



Now go back to the questions in Problems 1, 3 and 4 and see if and how they can be applied to your new graph.

still "symmetric" about the y-axis but now has a highest point since opens downward