

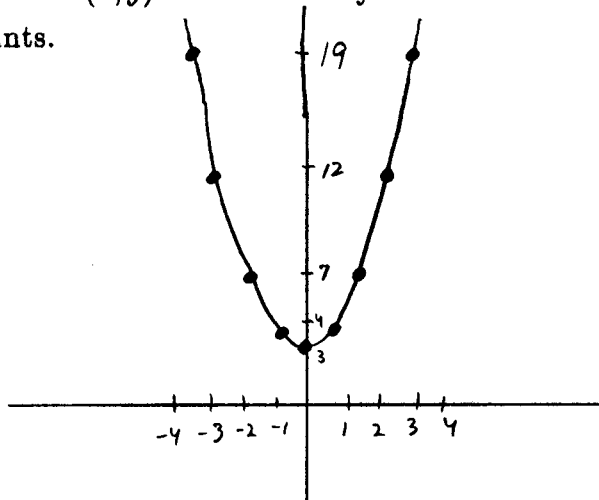
P-18 We now study the function given by $y = x^2 + 3$.

1. Complete the table by finding the y -value for each given x -value.

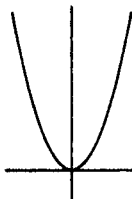
x	-4	-3	-2	-1	0	1	2	3	4
y	19	12	7	4	3	4	7	12	19

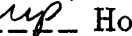
Is each y -value exactly three more than the corresponding y -value in your table for Problem 1 on P-17? yes

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



3. Does your graph still look like a parabola? yes Does it have a bottom-most point? yes Where? at (0, 3) If you were to fold your graph along the y -axis, would the two halves exactly match up? yes



4. If you began with your graph of $y = x^2$, , would you need to move it UP or DOWN to get the graph of $y = x^2 + 3$? up How far? 3 Does this number appear in the equation $y = x^2 + 3$? yes How could you graph $y = x^2 + 1$ using the graph of $y = x^2$? move $y = x^2$ up one
How about $y = x^2 - 5$? move $y = x^2$ down 5

5. How could you graph $y = -x^2 + 1$? make $y = x^2$ upside down and shift up one
How about $y = -x^2 - 3$? make $y = x^2$ upside down and shift down three