4.3   Graphing Non-Linear Functions

It's the same technique for graphing *any* non-linear function, be it quadratic, cubic, quartic, logarithmic, exponential, etc. You always need to draw out a table!
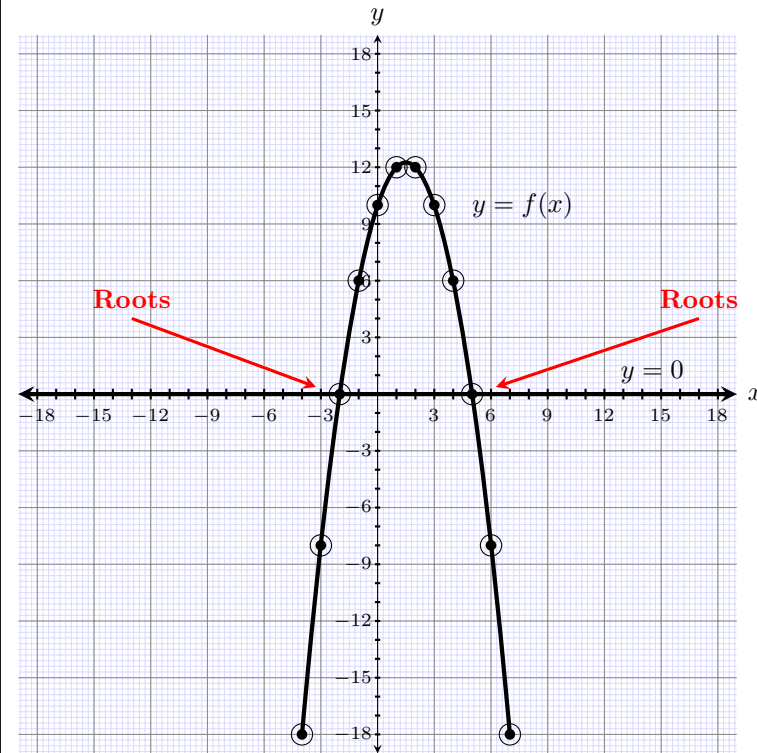
EXAMPLE:
Graph the function $f(x) = 10 + 3x - x^2$ in the domain $-4 \leq x \leq 7$, $x \in \mathbb{R}$

First we draw up a table:

x	$f(x) = 10 + 3x - x^2$	y
-4	$10 + 3(-4) - (-4)^2$	-18
-3	$10 + 3(-3) - (-3)^2$	-8
-2	$10 + 3(-2) - (-2)^2$	0
-1	$10 + 3(-1) - (-1)^2$	6
0	$10 + 3(0) - (0)^2$	10
1	$10 + 3(1) - (1)^2$	12
2	$10 + 3(2) - (2)^2$	12
3	$10 + 3(3) - (3)^2$	10
4	$10 + 3(4) - (4)^2$	6
5	$10 + 3(5) - (5)^2$	0
6	$10 + 3(6) - (6)^2$	-8
7	$10 + 3(7) - (7)^2$	-18

This has given us the following points: $(-4, -18)$, $(-3, -8)$, $(-2, 0)$, $(-1, 6)$, $(0, 10)$, $(1, 12)$, $(2, 12)$, $(3, 10)$, $(4, 6)$, $(5, 0)$, $(6, -8)$, $(7, -18)$. Graphing these points gives:

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