SOLUTIONS => Practice Questions

1 a) $f(x) = -x^2 + 4x + 1$ $A(0,1)$ $B(3,-4)$

* Remember $f(x) \Leftrightarrow y$.

$\Rightarrow A(0,1)$

L.S	R.S.
y	$-x^2+4x+1$
$=1$	$=-(0)^2+4(0)+1$
	$= 1$

Since L.S = R.S, point A(0,1) satisfies the equation

$\Rightarrow B(3,-4)$

L.S	R.S
y	$-x^2+4x+1$
$=-4$	$=-(3)^2+4(3)+1$
	$=-9+12+1$
	$= 3+1$
	$= 4$

Since L.S ≠ R.S, point B(3,-4) does not satisfy the equation

b) $f(x) = -x^2+4$ $A(3,-6)$ $B(-2,0)$

$\Rightarrow A(3,-6)$

L.S	R.S
y	$-x^2+4$
$=-6$	$=-(3)^2+4$
	$=-9+4$
	$=-5$

Since L.S $\neq$ R.S, point $A(3,-6)$ does not satisfy the equation

$\Rightarrow B(-2,0)$

L.S	R.S
y	$-x^2+4$
$=0$	$=-(-2)^2+4$
	$=-4+4$
	$=0$

Since L.S = R.S, point $B(-2,0)$ satisfies the equation.

c) $f(x) = 3x^2 + 2x - 4$ $A(2, 12)$ $B(5, 81)$

$\Rightarrow A(2, 12)$

L.S	R.S.
y	$3x^2 + 2x - 4$
	$= 3(2)^2 + 2(2) - 4$
$= 12$	$= 3(4) + 4 - 4$
	$= 12 + 4 - 4$
	$= 16 - 4$
	$= 12$

Since L.S = R.S, point A(2, 12) satisfies the equation.

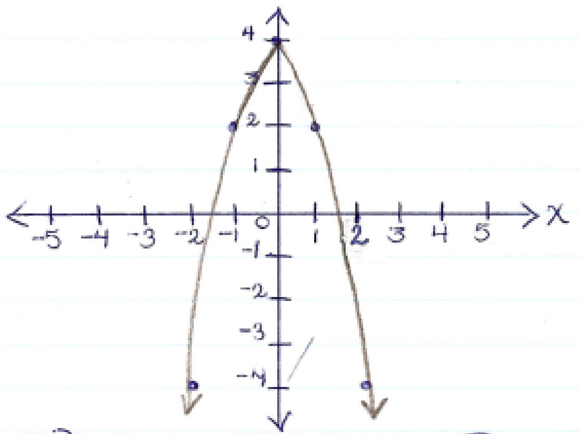
$\Rightarrow B(5, 81)$

L.S	R.S
y	$3x^2 + 2x - 4$
$= 81$	$= 3(5)^2 + 2(5) - 4$
	$= 3(25) + 10 - 4$
	$= 75 + 10 - 4$
	$= 85 - 4$
	$= 81$

Since L.S = R.S, point B(5, 81) also satisfies the equation.

2a) $y = -2x^2 + 4$

x	y
-2	-4
-1	2
0	4
1	2
2	-4



b) Domain: $\{x \mid x \in R\}$

c) Opens Downward

Range: $\{y \mid y \leq 4, y \in R\}$

Vertex: $(0, 4)$

Zeros of the Function: $x = -1.4$ and $x = 1.4$

Maximum Value: $(0, 4)$ or $y = 4$