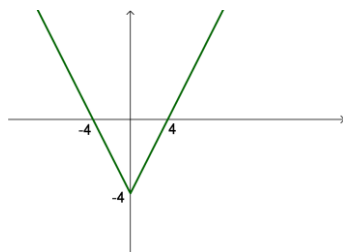


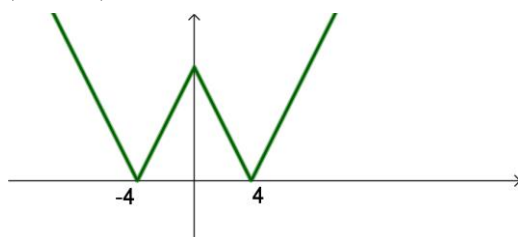
## Section 3: The modulus function

## Solutions to Exercise level 3

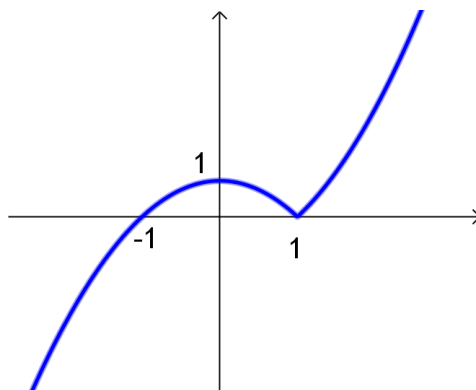
1. (i)  $y = |x| - 4$  is



so  $y = ||x| - 4|$  is



(ii)  $y = (x+1)|x-1|$

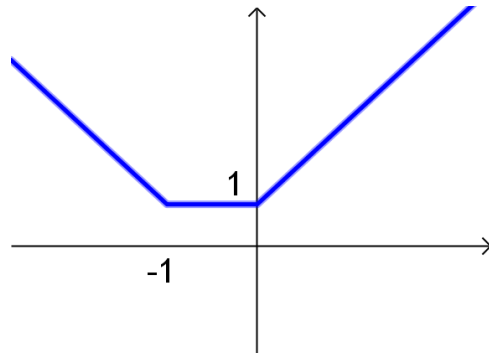
For  $x > 1$ , graph is  $y = (x+1)(x-1)$ For  $x < 1$ , graph is  $y = -(x+1)(x-1)$ 

(iii)  $y = |x| + |x+1|$

For  $x > 0$ ,  $y = x + x + 1 = 2x + 1$ For  $-1 < x < 0$ ,  $y = -x + x + 1 = 1$

## Edexcel A level Maths Functions 3 Exercise solutions

For  $x < -1$ ,  $y = -x - x - 1 = -2x - 1$



2.  $x^2 - 4|x| + 3 < 0$

For  $x > 0$ ,  $x^2 - 4x + 3 < 0$

$$(x-1)(x-3) < 0$$

$$1 < x < 3$$

For  $x < 0$ ,  $x^2 + 4x + 3 < 0$

$$(x+1)(x+3) < 0$$

$$-3 < x < -1$$

So solution is  $1 < x < 3$  or  $-3 < x < -1$

Check with graph:  $x^2 + 3 < 4|x|$

