

## Solving Modulus Problems

Modulus questions are very common in exams. It is important that you are confident with all aspects of questions including sketching graphs, finding the range and domain and solving equations.

### Examples

1. Given the function  $f(x) = 3|x - 1| - 2$ ,  $x \in \mathbb{R}$ ,

(a) Sketch the graph of  $y = f(x)$

(b) State the range of  $f$ .

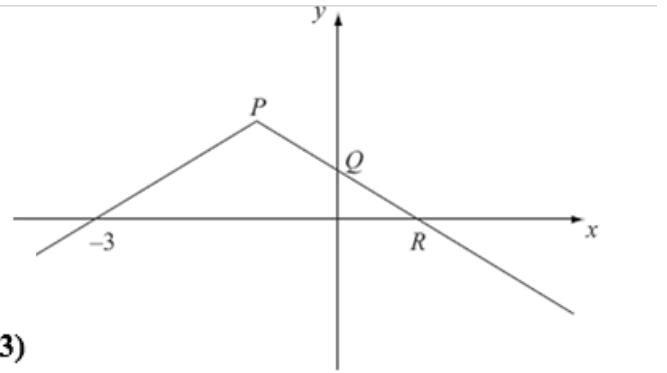
(c) Solve the equation  $f(x) = \frac{1}{2}x + 3$

### Test Your Understanding

Given that  $f(x) = 2 - |x + 1|$ ,

(c) find the coordinates of the points  $P$ ,  $Q$  and  $R$ . (3)

(d) solve  $f(x) = \frac{1}{2}x$ . (5)



Extension

[MAT 2006 1I]

The equation  $|x| + |x - 1| = 0$  has how many solutions?