1 $$f(x)=|3x+2|,\ x\in\mathbb{R}.$$

a) Sketch the graph of $f(x)$, clearly indicating the coordinates of any points where the graph of $f(x)$ meets the coordinate axes.

b) Solve the equation

$$f(x)=1.$$

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2 The functions f and g are defined as

$$f(x)=|2x-4|,\ x\in\mathbb{R}$$

$$g(x)=|x|,\ x\in\mathbb{R}.$$

a) Sketch in the same diagram the graph of f and the graph of g.
Mark clearly in the sketch the coordinates of any x or y intercepts.

b) Solve the equation

$$f(x)=g(x).$$

c) Hence, or otherwise, solve the inequality

$$f(x)<g(x).$$

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3 Solve the modulus inequality

$$12-2|2x-3|\geq 7.$$

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4 Solve the modulus equation

$$4x+|3x+2|=1.$$

5 Find the solutions of the equation

$$\left|2x^2-5\right|=13.$$

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6 The curve C_1 and the curve C_2 have respective equations

$$y=|x| \quad \text{and} \quad y=|x-2|+1.$$

a) Sketch the graph of C_2, indicating the coordinates of any intercepts with the coordinate axes.

b) Determine the coordinates of the point of intersection between the graph of C_1 and the graph of C_2.

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7 The straight line L with equation

$$y=x+3,\ x\in\mathbb{R},$$

intersects the curve C with equation

$$y=\left|x^2-9\right|,\ x\in\mathbb{R},$$

at three distinct points.

a) Sketch on the same set of axes the graph of L and the graph of C.
The sketch must include the coordinates of any x or y intercepts.

b) Find the coordinates of the points of intersections between L and C.