1 Solve the equation $|3-2x| = 4|x|$. **[4]**

2 Express $1 < x < 3$ in th $|x - a| < b$, where a and b are to be determined. **[2]**

3 Fig. 1 shows the graphs of $y = |x|$ and $y = a|x + b|$, where a and b are constants. The intercepts of $y = a|x + b|$ with the x- and y-axes are $(-1, 0)$ and $\left(0, \frac{1}{2}\right)$ respectively.

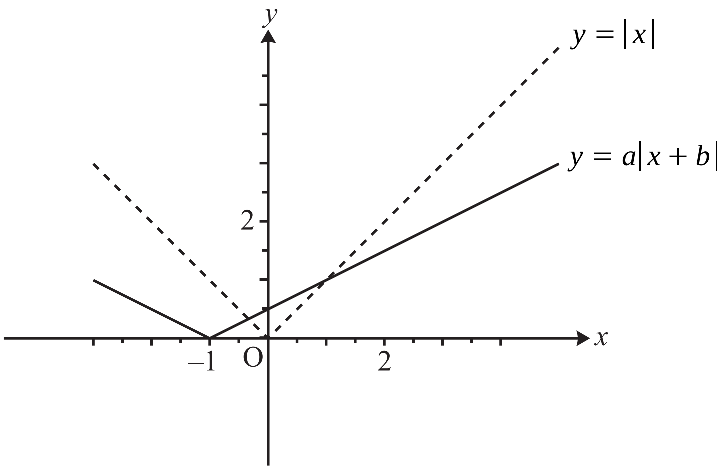

Fig. 1

(i) Find a and b. **[2]**

(ii) Find the coordinates of the two points of intersection of the graphs. **[4]**

4 Solve the inequality $|2x + 1| \geqslant 4$. **[4]**

5 Solve the equation $|2x - 1| = |x|$. **[4]**

6 Given that $f(x) = |x|$ and $g(x) = x + 1$, sketch the graphs of the composite functions $y = fg(x)$ and $y = gf(x)$, indicating clearly which is which. **[4]**

7 Solve the inequality $|x - 1| < 3$. **[3]**

8 Fig. 4 shows a sketch of the graph of $y = 2|x - 1|$. It meets the x- and y-axes at $(a, 0)$ and $(0, b)$ respectively.

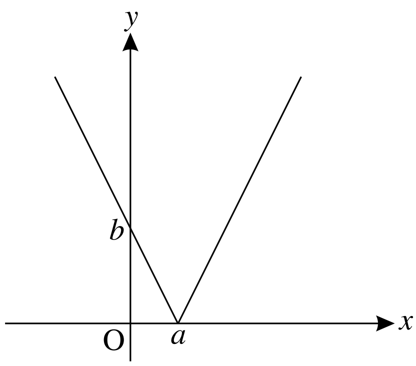

Fig. 4

Find the values of a and b. **[3]**

9 Solve the inequality $|2x - 1| \leqslant 3$. [4]

10 Fig.1 shows the graphs of $y = |x|$ and $y = |x - 2| + 1$. The point P is the minimum point of $y = |x - 2| + 1$, and Q is the point of intersection of the two graphs.

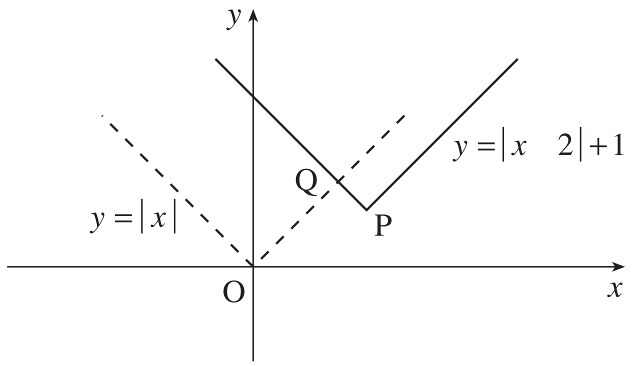

Fig. 1

(i) Write down the coordinates of P. [1]

(ii) Verify that the y-coordinate of Q is $1\frac{1}{2}$. [4]

11 Solve the equation $|3x - 2| = x$. [3]

12 Solve the equation $|3x + 2| = 1$. [3]