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

2 Express $1 < x < 3$ in the inequality $|x - a| < b$, where $a$ and $b$ are to be determined.

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 $(0, \frac{1}{2})$ respectively.

   ![Graph of y = |x| and y = a|x + b|](image)

   **Fig. 1**

   (i) Find $a$ and $b$.

   (ii) Find the coordinates of the two points of intersection of the graphs.

4 Solve the inequality $|2x + 1| \geq 4$. 

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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](image)

Find the values of \(a\) and \(b\). [3]

9 Solve the inequality \(|2x - 1| \leq 3\). [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.

![Graph of \( y = |x| \) and \( y = |x - 2| + 1 \).](image)

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 \( |3x + 2| = 1 \). \([3]\)