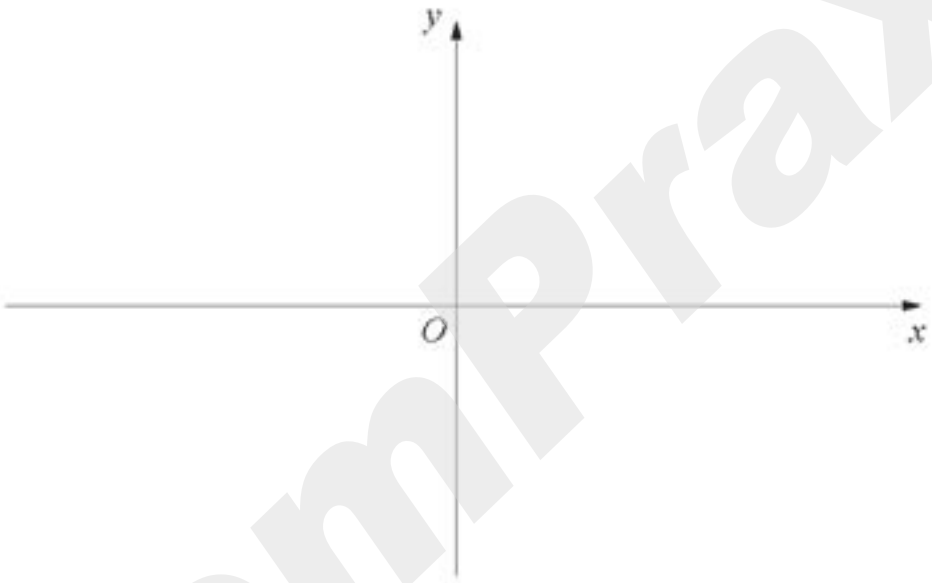
Equations, inequalities and graphs

(Past Year Topical Questions 2012-2017)

May/June 2012 (11)

1.

(i) Sketch the graph of $y = |2x - 5|$, showing the coordinates of the points where the graph meets the coordinate axes. [2]



(ii) Solve $|2x - 5| = 3$. [2]

May/June 2012 (12)

7.

(i) Sketch the graph of $y = |x^2 - x - 6|$, showing the coordinates of the points where the curve meets the coordinate axes. [3]

(ii) Solve $|x^2 - x - 6| = 6$. [3]

Oct/Nov 2012 (11)

1.

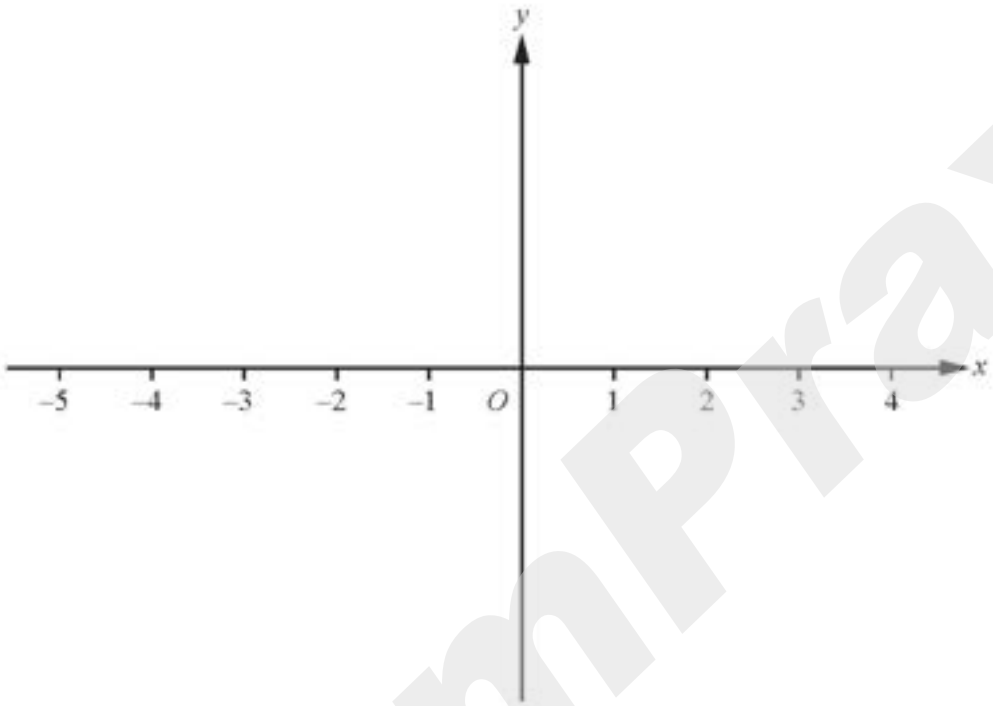
(i) Sketch the graph of $y = |3 + 5x|$, showing the coordinates of the points where your graph meets the coordinate axes. [2]

(ii) Solve the equation $|3 + 5x| = 2$. [2]

Oct/Nov 2013 (11)

8.

(i) On the grid below, sketch the graph of $y = |(x-2)(x+3)|$ for $-5 \leqslant x \leqslant 4$, and state the coordinates of the points where the curve meets the coordinate axes. [4]



(ii) Find the coordinates of the stationary point on the curve $y = |(x-2)(x+3)|$. [2]

(iii) Given that k is a positive constant, state the set of values of k for which $|(x-2)(x+3)| = k$ has 2 solutions only. [1]

May/June 2014 (12)

3.

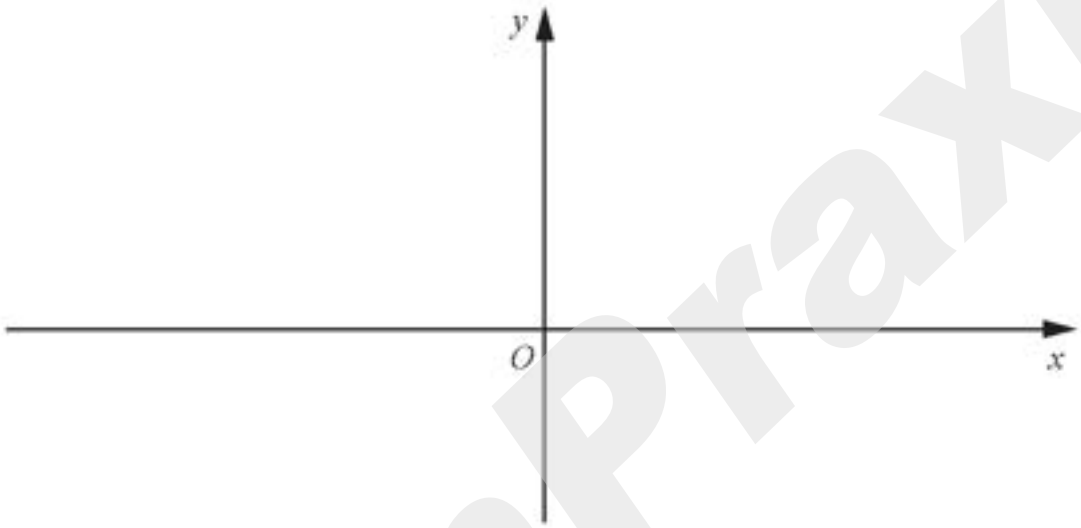
(i) Sketch the graph of $y = |(2x + 1)(x - 2)|$ for $-2 \leqslant x \leqslant 3$, showing the coordinates of the points where the curve meets the x- and y-axes. [3]

(ii) Find the non-zero values of k for which the equation $|(2x + 1)(x - 2)| = k$ has two solutions only. [2]

Oct/Nov 2015 (13)

6.

(i) On the axes below, sketch the graph of $y = |x^2 - 4x - 12|$ showing the coordinates of the points where the graph meets the axes. [3]



(ii) Find the coordinates of the stationary point on the curve $y = |x^2 - 4x - 12|$. [2]

(iii) Find the values of k such that the equation $|x^2 - 4x - 12| = k$ has only 2 solutions. [2]

Oct/Nov 2016 (13)

3.

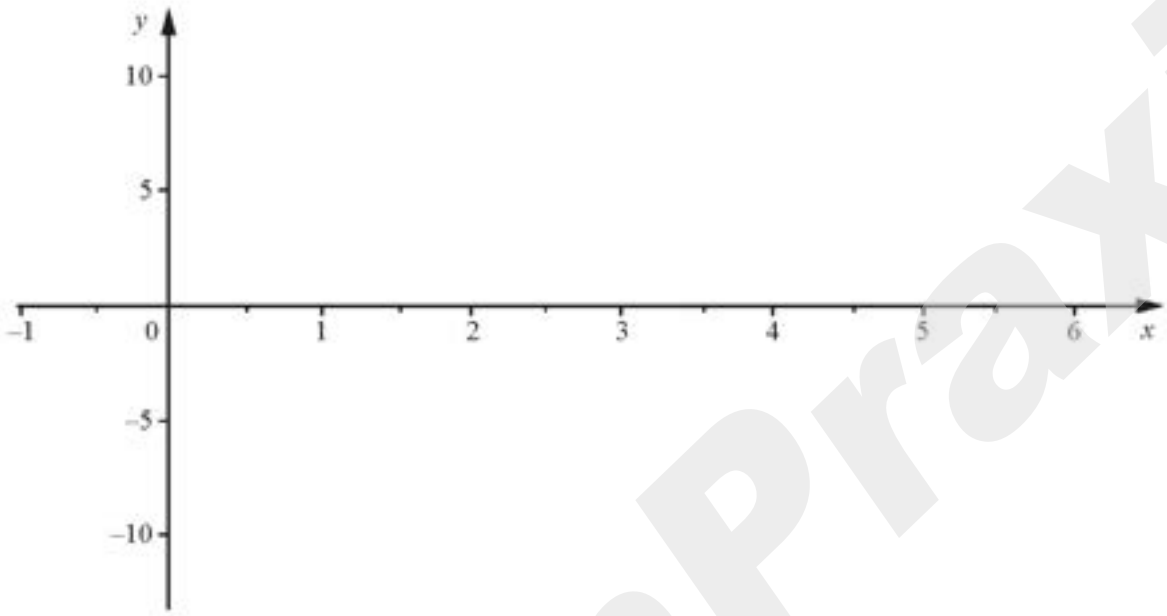
(i) Given that $3x^2 + p(1 - 2x) = -3$, show that, for x to be real, $p^2 - 3p - 9 \geqslant 0$. [3]

(ii) Hence find the set of values of p for which x is real, expressing your answer in exact form. [3]

May/June 2017 (11)

8.

(i) On the axes below sketch the graphs of $y = |2x - 5|$ and $9y = 80x - 16x^2$. [5]



(ii) Solve $|2x - 5| = 4$. [3]

(iii) Hence show that the graphs of $y = |2x - 5|$ and $9y = 80x - 16x^2$ intersect at the points where $y = 4$. [1]

(iv) Hence find the values of x for which $9|2x - 5| \leqslant 80x - 16x^2$. [2]

+6018 – 375 2833 www.chempraxis.com.my