Sample Paper 2014: Paper 1

Question 4 (25 marks)

Question 4 (a)

$2x+8y-3z=-1...(\mathbf{1})$ ← Eliminate the x's by subtracting pairs of equations.

$2x-3y+2z=2.....(\mathbf{2})$

$2x+y+z=5.....(\mathbf{3})$

$(\mathbf{1})-(\mathbf{2}): 11y-5z=-3...(\mathbf{4})(\times 4)$ ← Eliminate the z's.

$(\mathbf{1})-(\mathbf{3}): 7y-4z=-6....(\mathbf{5})(\times -5)$

$$\begin{array}{l} 44y-20z=-12 \\ -35y+20z=30 \\ \hline 9y \qquad\quad =18 \Rightarrow y=2 \end{array}$$

$11(2)-5z=-3...(\mathbf{4})$ ← Substitute the value of y into equation (**4**) to find z.

$22-5z=-3$

$-5z=-25$

$\therefore z=5$

$2x+8(2)-3(5)=-1...(\mathbf{1})$ ← Substitute the values of y and z into equation (**1**) to find x.

$2x+16-15=-1$

$2x=-2$

$\therefore x=-1$

Answer: $(-1, 2, 5)$

Question 4 (b) (i)

$f(x)=g(x)$ ← Find the points where the graphs of the 2 functions intersect.

$|x-3|=2$

$x-3=\pm 2$

$\therefore x=1, 5$

Find where the $f(x)$ cuts the axes.

Cuts x-axis: Put $f(x)=0$

$f(x)=0$

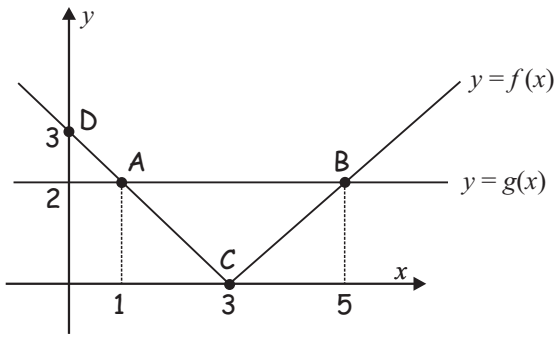
$|x-3|=0$

$x-3=0$

$x=3$

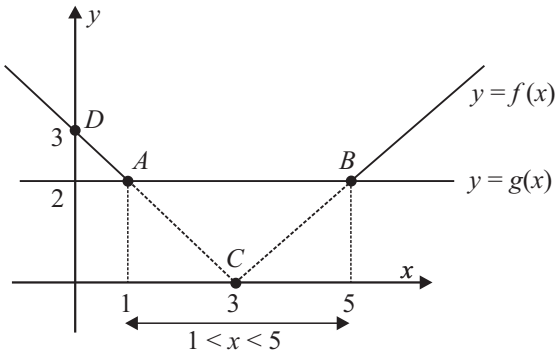
Cuts y-axis: Put $x=0$

$f(0)=|0-3|=|-3|=3$



Answers: $A=(1, 2)$, $B=(5, 2)$, $C=(3, 0)$, $D=(0, 3)$

Question 4 (b) (ii)



You can see from the graph the values of x where $f(x) < g(x)$.

Answer: $1 < x < 5$