Sample Paper 4: Paper 1

Question 2 (25 marks)

Question 2 (a)

Let $\frac{ax}{b-c} = \frac{by}{c-a} = \frac{cz}{a-b} = k$

$ax = k(b-c)$

$by = k(c-a)$

$cz = k(a-b)$

$ax + by + cz = kb - kc + kc - ka + ka - kb = 0$

Question 2 (b) (i)

$x + \sqrt{5x+19} = -1$

$\sqrt{5x+19} = -(x+1)$

$5x + 19 = x^2 + 2x + 1$

$x^2 - 3x - 18 = 0$

$(x+3)(x-6) = 0$

$x = -3,\ 6$

Check solutions:

$x = -3 : -3 + \sqrt{4} = -3 + 2 = -1$

$x = 6 : 6 + \sqrt{49} = 6 + 7 = 13$

Ans: $x = -3$

Question 2 (b) (ii)

$\log_2 x + \frac{12}{\log_2 x} = 7$

$(\log_2 x)^2 - 7\log_2 x + 12 = 0$

$(\log_2 x - 3)(\log_2 x - 4) = 0$

$\therefore \log_2 x = 3 \Rightarrow x = 2^3 = 8$

$\therefore \log_2 x = 4 \Rightarrow x = 2^4 = 16$