1(i) $A(2,3), B(-1,0), C(2,-4)$

$ar(\triangle ABC)$

$= \frac{1}{2}|2(0+4)+(-1)(-4-3)+2(3-0)|$

$= \frac{1}{2}|2\times4-1(-7)+2\times3|$

$= \frac{1}{2}|8+7+6|$

$= \frac{21}{2}$ sq. units

1(ii) $A(-5,-1), B(3,-5), C(5,2)$

$ar(\triangle ABC)$

$= \frac{1}{2}\begin{vmatrix} -5 & -1 \\ 3 & -5 \\ 5 & 2 \\ -5 & -1 \end{vmatrix}$

$= \frac{1}{2}|(-5)(-5)-3(-1)+3\times2-5(-5)+5(-1)-(-5)2|$

$= \frac{1}{2}|25+3+6+25-5+10|$

$= \frac{1}{2}\times64$

$= 32$ sq. units

2(i) $A(7,2), B(5,1), C(3,k)$

Pts A, B, C are collinear

$\therefore ar(\triangle ABC) = 0$

$\frac{1}{2}[7(1-k)+5(k+2)+3(-2-1)] = 0$

$7-7k+5k+10-9=0$

$\Rightarrow -2k = -8$

$\Rightarrow k = \frac{-8}{-2}$

$\Rightarrow k = 4$

2(ii) $A(8,1), B(k,-4), C(2,-5)$

Pts A, B, C are collinear

$\therefore ar(\triangle ABC) = 0$

$\frac{1}{2}[8(-4+5)+k(-5-1)+2(1+4)] = 0$

$\Rightarrow 8\times1+k(-6)+2\times5=0$

$\Rightarrow 8-6k+10=0$

$\Rightarrow -6k = -18$

$\Rightarrow k = \frac{-18}{-6}$

$\Rightarrow k = 3$