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# LINE (Q 3, PAPER 2)

## 2000

3 (a) The equation of the line $L$ is $14x + 6y + 1 = 0$.
Find the equation of the line perpendicular to $L$ that contains the point $(3, -2)$.

3 (b) $a(1, -2)$ and $c(-4, 8)$ are two points.
$f$ is the transformation $(x, y) \to (x', y')$ where $x' = 2x - 3y$ and $y' = 6x + y$.
(i) $b$ divides $[ac]$ in the ratio 3:2. Find the coordinates of $b$.

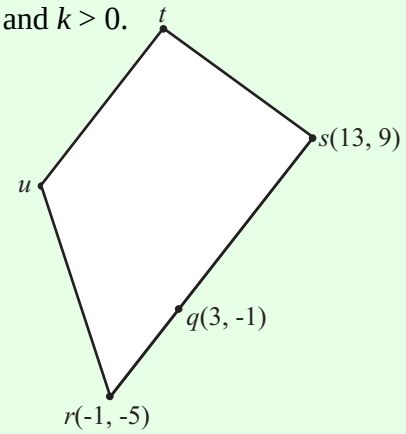
(ii) Find $f(a)$, $f(b)$ and $f(c)$.

(iii) Verify that $|f(a)\, f(b)| : |f(b)\, f(c)| = |ab| : |bc|$.

3 (c) $rstu$ is a quadrilateral where $r$ is $(-1, -5)$ and $s$ is $(13, 9)$.
$q(3, -1)$ lies between $r$ and $s$.

(i) The coordinates of $u$ are $(-2k, 3k)$ where $k \in \mathbf{R}$ and $k > 0$.
The area of the triangle $rqu$ is 28 square units.
Find the value of $k$.

(ii) The slope of $ts$ is $-\frac{3}{11}$.
$sr$ is parallel to $tu$.
Find the coordinates of $t$.




**ANSWERS**

3 (a) $3x - 7y - 23 = 0$

3 (b) (i) $b(-2, 4)$ (ii) $(8, 4), (-16, -8), (-32, -16)$

3 (c) (i) 2 (ii) $(2, 12)$