Precal Unit 1 Topic 1 VD

Given $A(x_a, y_a)$ and a line L: ax+by=c,

(1)Find a parallel line M and a perpendicular line N passes though A.

(2)Let $B(x_2, y_2)$ be the intersection of L and N. $C(x_3, y_2)$ is on the line M. What are the coordinates of the B and C?

(3) Find the area of $\triangle ABC$.

Coordinate of A	Equation of L	Solutions
A(2,1)	$4x - 2y = 3$	(1) $M : y - 1 = 2(x - 2)$ $N : y - 1 = -\dfrac{1}{2}(x - 2)$ (2) $B(\dfrac{7}{5}, \dfrac{13}{10}), C(\dfrac{43}{20}, \dfrac{13}{10})$ (3) $\dfrac{9}{80}$
A(-3, 2)	$x + y = 7$	(1) $M : y - 2 = -(x + 3)$ $N : y - 2 = (x + 3)$ (2) $B(1, 6), C(-7, 6)$ (3) 16
A(2,-1)	$3x - 2y = 6$	(1) $M : y + 1 = \dfrac{3}{2}(x - 2)$ $N : y + 1 = -\dfrac{2}{3}(x - 2)$ (2) $B(\dfrac{20}{13}, -\dfrac{9}{13}), C(\dfrac{86}{39}, -\dfrac{9}{13})$ (3) $\dfrac{4}{39}$
A(1,4)	$y = -5x + 3$	(1) $M : y - 4 = -5(x - 1)$ $N : y - 4 = \dfrac{1}{5}(x - 1)$ (2) $B(-\dfrac{2}{13}, \dfrac{49}{13}), C(\dfrac{68}{65}, \dfrac{49}{13})$ (3) $\dfrac{9}{65}$

A(2, -3)	$\frac{1}{4}x + y = 1$	(1) $M: y+3 = -\frac{1}{4}(x-2)$ $N: y+3 = 4(x-2)$ (2) $B(\frac{48}{17}, \frac{5}{17}), C(-\frac{190}{17}, \frac{5}{17})$ (3) $\frac{392}{17}$
A(-3, 5)	$y = 3x - 4$	(1) $M: y-5 = 3(x+3)$ $N: y-5 = -\frac{1}{3}(x+3)$ (2) $B(\frac{12}{5}, \frac{16}{5}), C(-\frac{18}{5}, \frac{16}{5})$ (3) $\frac{27}{5}$
A(-2, 2)	$y = 2x + 1$	(1) $M: y-2 = 2(x+2)$ $N: y-2 = -\frac{1}{2}(x+2)$ (2) $B(0,1), C(-\frac{3}{2},1)$ (3) $\frac{3}{4}$
A(-1, 1)	$y = -2x + 1$	(1) $M: y-1 = -2(x+1)$ $N: y-1 = \frac{1}{2}(x+1)$ (2) $B(-\frac{1}{5}, \frac{7}{5}), C(-\frac{6}{5}, \frac{7}{5})$ (3) $\frac{1}{5}$