Lycee' Des Arts — Correction-Standards — 9th Grade
Mathematics — 3rd Trial — 2014-2015

Exercise-1:

1) $\sin^2\alpha + \cos^2\alpha = 1$

$\cos^2\alpha = 1 - \left(\frac{2-\sqrt{3}}{3}\right)^2$

$= \frac{9 - (7 - 4\sqrt{3})}{9}$

$\cos^2\alpha = \frac{2+4\sqrt{3}}{9}$

α is acute then $\cos\alpha > 0$

$\cos\alpha = \sqrt{\frac{2+4\sqrt{3}}{3}}$ (A)

2) $M(m-1, n+2)$ belongs to (D): $y = 3x - 11$

So, $n+2 = 3m - 14$

$n - 3m = -16$ ... (1)

$\tan\alpha = m + 2n$.

So, Slope $(D) = 3 = \tan\alpha$.

$2n + m = 3$ ... (2)

$\begin{cases} n - 3m = -16 \\ (2n + m = 3)\ (3) \end{cases}$

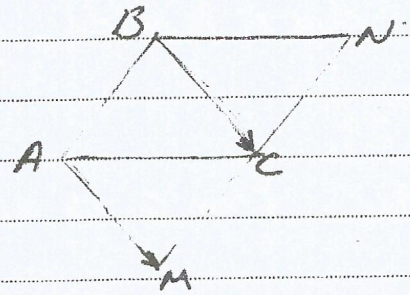
$7n = -7$

$n = -1$

then $m = 5$

(C)

3)



$\vec{AN} = \vec{AB} + \vec{AC}$ (given)

then ABNC

So $\vec{AB} = \vec{CN}$

$\vec{AM} = \vec{BC}$ (given)

So, $\vec{AB} = \vec{MC}$

Hence, $\vec{CN} = \vec{MC}$ (by comparison)

Thus C is the midpt of [MN]. (B)

4) $M(x, y)$ belongs to (D): $2y - 3x + 4 = 0$ ... (1)

$\frac{x}{2} = \frac{y}{5}$ ... (2)

$\begin{cases} 2y - 3x + 4 = 0 \\ 2y = 5x \end{cases}$

So, $5x - 3x + 4 = 0$

$x = -2$

& $y = -5$ (A).