$So,\ N(x) = 36 - \left[\frac{x(6-x)}{2} + \frac{x}{2} + \frac{5(6-x)}{2} + \frac{x(6-x)}{2} \right].$

$= 36 - \frac{1}{2}\left(6x - x^2 + x + 30 - 5x + 6x - x^2 \right)$

$= 36 - \frac{1}{2}\left(-2x^2 + 8x + 30 \right)$

$= 36 + x^2 - 4x - 15$

Thus, $\boxed{N(x) = x^2 - 4x + 21}$

2) $N(x) = -6x + 24$

$x^2 - 4x + 21 = -6x + 24$

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

So, $(x-1)(x+3) = 0$ (using part 3A)

Thus, $x = 1$ accepted $0 < x < 6$

or $x = -3$ rejected

3) A is the symmetric of O w.r.t K (given)

Then, K is the midpt of [OA]

So, $x_K = \frac{x_A + x_O}{2}$.

$\left(\frac{21}{2} = \frac{x^2 - 4x + 21}{2} \right) \times 2$

So, $x^2 - 4x = 0$

$x(x-4) = 0$

So $x = 0$ rej. or $x = 4$ accepted.

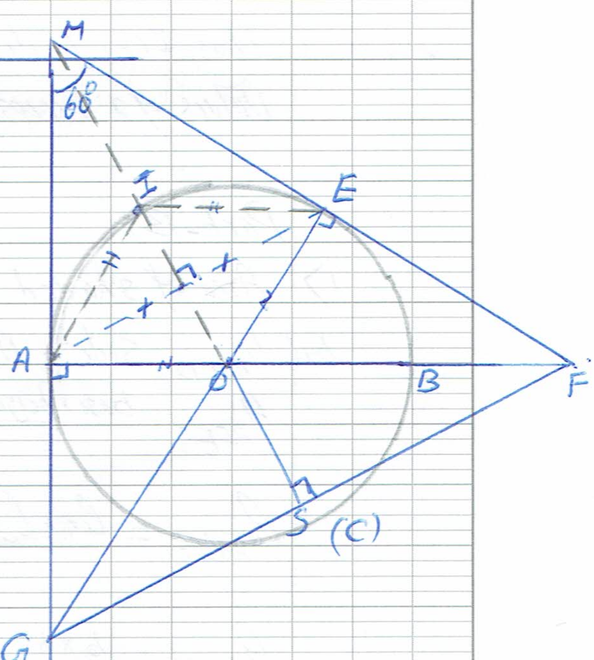
Ex-3. 1) Done ✓

2a) [MA) + [ME) are tangents to (C) at A + E resp. (given)

O is center of (C) (given)

Thus, [MO) is the bisector of $A\hat{M}E$

(Tangent theorem: line joining exterior pt from which tangents are drawn + center is bisector of angle formed by tangents)



b) [MO) is bisector of $E\hat{M}A$ (proved)

[MO) cuts (C) at I (given)

Thus, I is midpt of arc $\widehat{AE}$.