$\Rightarrow$ E is symmetric of D with respect to [MO).

(MD) is tangent to (C) at D.

$\therefore$ (ME) is tangent to (C) at E.

c) ~~[OD] $\perp$ (MD)~~ $M\hat{D}O = 90°$ ($\measuredangle$ between radius and tangent "tangent theorem")

$M\hat{E}O = 90°$ ($\measuredangle$ between radius and tangent "tangent theorem")

$\Rightarrow MD \perp OD$

& $ME \perp OE$

but $OD = OE$ radii of same circle

$\Rightarrow$ O is equidistant from [MD) & [ME)

hence, [MO) is bisector of $D\hat{M}E$.

But $D\hat{M}O = 30°$ (sum of $\measuredangle$'s in $\triangle MDO$)

$\therefore D\hat{M}E = 2D\hat{M}O$

$= 60°$

d) In $\triangle$'s MDO & MEO we have

[MO] is a common hypotenuse.

$M\hat{D}O = M\hat{E}O = 90°$ (equal right angles)

& $D\hat{M}O = O\hat{M}E = 30°$ (equal acute angles)

$\Rightarrow \triangle$'s MDO & MEO are equal by RHA

$\therefore MD = ME$ (by homo. ele.)

Now, $MD^2 = MO^2 - DO^2 = 10^2 - 5^2 = 75$ (by pyth. theorem)

2. From a point M outside a circle, we can draw two tangents so that $MD = ME$.