6) c). $LD = \sqrt{(x_L - x_D)^2 + (y_L - y_D)^2}$

$= \sqrt{(0-6)^2 + (5-0)^2}$

$= \sqrt{(6)^2 + 5^2}$

$= \sqrt{36+25}$

$= \sqrt{61}$ ✓

$LD \simeq 7.81$ cm ✓

keep it in exact form unless your asked to do otherwise

b) (LO) perpendicular to (OD) (orthonormal system: x-axis ⊥ y-axis at O)

So, ΔLOD is right at O.

(LI) perpendicular to (ID) ((d') perpendicular (d) at I; L & D belong to (d') & (d) respectively)

So, ΔLID is right at I.

Then, the quadrilateral LOID is formed of 2 right Δs LID & LOD sharing same hyp [LD]

Then, LOID is inscribed in a circle

Thus, L, O, I, D belong to the same circle (C) of diameter [LD], center Ω midpoint of [LD] and radius $\frac{LD}{2} = \frac{7.81}{2}$ cm ($r = \frac{L}{2}$).

Complete on last page

7) Since, (T) tangent to (C) at L (given).

So, (T) is perpendicular to (LD) (tangent ⊥ diameter).

If, L belongs to (T) (given)

So, coordinates of L are solution for eqn (T)

L(0,5)

(T): $5y - 6x - 25 = 0$

$5(5) - 6(0) - 25 = 0$

$25 - 0 - 25 = 0$

$0 = 0$

Then, (T) has eqn: $5y - 6x - 25 = 0$

P.7.