Date:

Thus, [PF) is a tangent to (C) at F (tangent theorem:
St. line joining center & exterior pt. is perp. bisector of chord formed by pts of tangencies)

6) a) O & B are fixed
where M & N vary as D varies on (d)

b). In $\triangle$ NOB we have:
(ON) is perp. bisector of [AB] (given)
So, $N\hat{O}B = 90°$.
then, $\triangle$ NOB is right at O.
I is the midpt of [NB] (given)
So, [OI] is a median relative to [NB]
hence IO = IN = IB (median relative to hyp of a right $\triangle$)
but O & B are two fixed pts
which means I is at equal distances from the fixed pts O & B.
Thus, as D varies on (d) I traces the perp. bisector of [OB].

c) In $\triangle$ KOB we have:
(AE) // (OD) (proved)
K belongs to (OD) (given)
So, (AE) // (OD).
but E is a pt on (C) with diameter [AB] (given)
Then, $A\hat{E}B = 90°$ (inscribed angle formed by diameter)
hence, $O\hat{K}B = 90°$ (A st. line perp. to one of two parallel st. lines is perp. to the other.)