التاريخ:

5.a) In quadrilateral AEOF we have:
F is the symmetric of E w.r.t (AB) (given)
then, (AB) is the perp. bisector of [EF].
then, $\boxed{AE = AF}$ ... ©
And $\boxed{OE = OF}$ (radii of (C)) ... ⓐ
but (OE) ⊥ (PD) (proved)
& $E\hat{P}O = 30°$ (proved)
So, $E\hat{O}P = 60°$ (sum of angles in △ EOP)... ⓑ
then, from ⓐ & ⓑ we get
△ EOA is equilateral (having two equal sides + 60°)
hence, AE = EO = OF = AF (by comparison)
Thus, quad. AEOF is a rhombus (having 4 equal sides)

b) AE[illegible] is a rhombus (proved)
So, (AE) // (FO). (opp. sides of a rhombus are parallel)
but AEO is an equilateral △ (proved)
So, $E\hat{A}O = 60°$ (angle formed by sides of an equi △)
but $D\hat{O}B = 60$ (given)
Then, (AE) // (OD) (equal corresponding angles are held by parallel st. lines).
hence, (OD) // (OF) (two st. lines parallel to same st. line
but O is a common pt. are parallel)
Thus, the pts O, D & F are collinear.

c) (AB) is perp. bisector of [EF] (proved)
but F & O belong to (AB) (given)
hence (FO) is the perp. bisector of [EF].
But, (EP) is tangent to (C) at E. (proved)
And F belong to (C).