

STEP II, 2010, Q1

- 1 Let P be a given point on a given curve C . The *osculating circle* to C at P is defined to be the circle that satisfies the following two conditions at P : it touches C ; and the rate of change of its gradient is equal to the rate of change of the gradient of C .

Find the centre and radius of the osculating circle to the curve $y = 1 - x + \tan x$ at the point on the curve with x -coordinate $\frac{1}{4}\pi$.



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