2.77

$y' = \frac{1}{2\sqrt{x}}$

(נקודת חיתוך המשיק הנתון עם ציר ה-x: 45°)

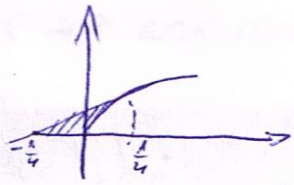
$1 = \frac{1}{2\sqrt{x}}$

$x = \frac{1}{4}$

$m = y'(\frac{1}{4}) = 1$ $\quad (\frac{1}{4}, \frac{1}{2})$ נקודת ההשקה

משוואת המשיק:

$y = x + \frac{1}{4}$



$$\pi \int_{-\frac{1}{4}}^{\frac{1}{4}} (x+\tfrac{1}{4})^2 dx - \pi \int_{0}^{\frac{1}{4}} x^2 dx =$$

$$\pi \left[\frac{x^3}{3} + \frac{1}{4}x^2 + \frac{1}{16}x \Big|_{-1/4}^{1/4} - \frac{x^2}{2}\Big|_0^{1/4} \right] = \pi \left[\left(\frac{1}{64\cdot 3} + \frac{1}{64} + \frac{1}{16\cdot 4} - \frac{1}{2\cdot 16} \right) - \left(\frac{-1}{3\cdot 64} + \frac{1}{64} - \frac{1}{16\cdot 4} \right) \right]$$

$$= \pi \frac{1+3-3}{96} = \boxed{\frac{\pi}{96}}$$