.38 (776)

$$y = \int y' = \sqrt{x^2+5} - \frac{x^2}{6} + C$$

$$y' = 0 = \frac{x}{\sqrt{x^2+5}} - \frac{x}{3} \Rightarrow \frac{x}{\sqrt{x^2+5}} = \frac{x}{3} \qquad x = 0$$

$$\sqrt{x^2+5} = 3 \Rightarrow \boxed{x = \pm 2}$$

x	-4	-2	-1	0	1	2	4
y'	+		-		+		-
y	↗	max	↘	min	↗	max	↘

$C = 0 \Leftarrow \max\left(2, 2\frac{1}{3}\right)$ נתון

$\min(0, \sqrt{5}) \quad \max(-2, 2\frac{1}{3})$

.49 (777)

$u = \sin^2 x$ נגזור

$du = 2\sin x \cos x \, dx$

$$\frac{du}{2\sin x \cos x} = dx$$

$$f = \int f' = \int \left(\cos x + \frac{\cos x}{\sin^2 x}\right) dx = \int \cos x \, dx + \int \frac{\cos x \, dx}{\sin^2 x} =$$

$$= +\sin x + \int \frac{\cos x \, du}{2\sin x \cos x \cdot \sin^2 x} = +\sin x + \int \frac{du}{2\sin^3 x} = +\sin x + \int \frac{du}{2u^{\frac{3}{2}}}$$

$\left(\frac{1}{2}u^{-1\frac{1}{2}}\right)$

$$= +\sin x + \frac{1}{2} \cdot \frac{u^{-\frac{1}{2}}}{-\frac{1}{2}} + C = +\sin x - \frac{1}{\sin x} + C$$

$$f' = 0 = \cos x + \frac{\cos x}{\sin^2 x} \Rightarrow \cos x\left(1 + \frac{1}{\sin^2 x}\right) = 0 \Rightarrow C = 0$$

$\cos x = 0$

x	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$
y'	+		-		+
y	↗	max	↘	min	↗

$x = \frac{\pi}{2} + 2\pi k \Rightarrow \left(\frac{\pi}{2}, 0\right)$ max

$x = -\frac{\pi}{2} + 2\pi k \Rightarrow \left(\frac{3\pi}{2}, 0\right)$ min (בתחום)