C CSOPORT

1 a) $T_2(x) = f(-1) + f'(-1)\cdot(x+1) + \frac{f''(-1)}{2}\cdot(x+1)^2$

$$\boxed{R_2(x) = f(x) - T_2(x)}$$

1 b) $f(x) = x^2 \quad f'(x) = 2x \quad f''(x) = 2$

$f(-1) = 1 \quad f'(-1) = -2 \quad f''(-1) = 2$

$$T_2(x) = 1 - 2\cdot(x+1) + (x+1)^2$$

$|f(3) - T_2(3)| = |R_2(3)| \leq$ TAYLOR-TÉTEL

$$\leq \max_{-1\leq b\leq 3} \left| \frac{f^{(3)}(b)}{3!}\cdot(3-(-1))^2 \right| = 0$$

HISZEN $\boxed{f^{(3)}(x) \equiv 0}$

(ÉS VALÓBAN, $T_2(x) = \ldots = x^2$,

TEHÁT $R_2(x) = f(x) - T_2(x) = x^2 - x^2 = 0$

ÍGY $|R_2(3)| = 0$ ✓)

② $\dot{x}(t) = 6 \cdot \cos^2(t) \cdot (-\sin(t))$

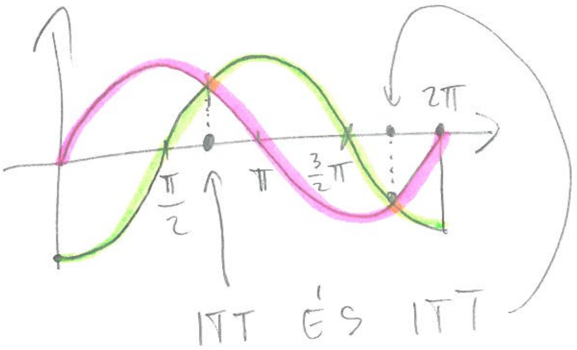
$\dot{y}(t) = 6 \cdot \sin^2(t) \cdot \cos(t)$

$$y'(x(t)) = \frac{\dot{y}(t)}{\dot{x}(t)} = \frac{6 \cdot \sin^2(t) \cdot \cos(t)}{6 \cdot \cos^2(t) \cdot (-\sin(t))} = -\tan(t)$$

$\boxed{x - y + 4 = 0} \iff \boxed{y = x + 4} \Rightarrow$ MEREDEKSÉGE: $m = 1$

KÉRDÉS: MELY t-RE LESZ $\boxed{-\tan(t) = m}$

AZAZ MIKOR LESZ $\boxed{\sin(t)} = \boxed{-\cos(t)}$?

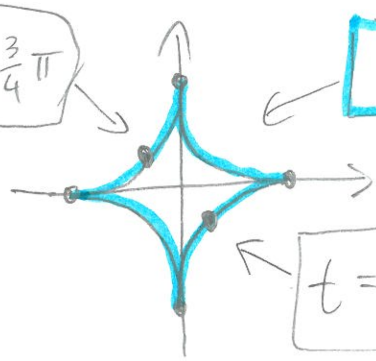


ITT ÉS ITT, AZAZ $\boxed{t_1 = \frac{3}{4}\pi}$ ÉS $\boxed{t_2 = \frac{7}{4}\pi}$

$\cos\left(\frac{3}{4}\pi\right) = -\frac{1}{\sqrt{2}}$ $\quad \sin\left(\frac{3}{4}\pi\right) = \frac{1}{\sqrt{2}}$ $\quad \boxed{(x(t_1), y(t_1)) = \left(-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)}$

$\cos\left(\frac{7}{4}\pi\right) = \frac{1}{\sqrt{2}}$ $\quad \sin\left(\frac{7}{4}\pi\right) = -\frac{1}{\sqrt{2}}$ $\quad \boxed{(x(t_2), y(t_2)) = \left(\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right)}$

$\boxed{t = \frac{3}{4}\pi}$



ASZTROIS

(LÁSD 100. OLDAL)

$\boxed{t = \frac{7}{4}\pi}$

③ $f(x) = \sqrt{6x - x^2}$

$$f'(x) = \frac{1}{2}\,\frac{1}{\sqrt{6x-x^2}} \cdot (6-2x) = \frac{3-x}{\sqrt{6x-x^2}}$$

$$f''(x) = \frac{(-1)\cdot\sqrt{6x-x^2} - (3-x)\cdot\frac{1}{2}\cdot(6x-x^2)^{-1/2}\cdot(6-2x)}{6x-x^2}$$

$$f'(2) = \frac{3-2}{\sqrt{12-4}} = \frac{1}{\sqrt{8}}$$

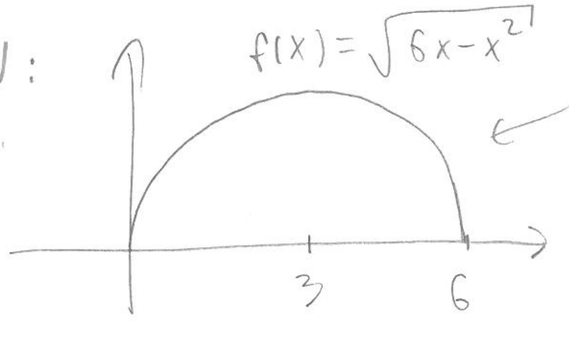
$$f''(2) = \frac{(-1)\cdot\sqrt{8} - 1\cdot\frac{1}{2}\cdot 8^{-1/2}\cdot 2}{8} = \frac{-\sqrt{8}-\frac{1}{\sqrt{8}}}{8} =$$

$$= \frac{-8-1}{8\cdot\sqrt{8}} = -\frac{9}{8}\cdot\frac{1}{\sqrt{8}} = \frac{-9}{8^{3/2}}$$

$$G(2) = \frac{f''(2)}{\left(1+(f'(2))^2\right)^{3/2}} = \frac{-9/8^{3/2}}{\left(1+\frac{1}{8}\right)^{3/2}} = \frac{-9/8^{3/2}}{(9/8)^{3/2}} =$$

$$= \frac{-9}{9^{3/2}} = -9^{1-\frac{3}{2}} = -9^{-1/2} = -\frac{1}{3} = \boxed{\text{KERESETT GÖRBÜLET}}$$

(VALÓBAN:



$\leftarrow$ $\boxed{r = 3 \text{ SUGARÚ FÉLKÖR}}$)

4) a) $\int \frac{x}{\sqrt{5-x^2}}\,dx = \boxed{\begin{array}{l|l} u = 5-x^2 & \boxed{x\,dx =} \\ \frac{du}{dx} = -2x & \boxed{-\frac{1}{2}du} \end{array}}$

$= \int \frac{1}{\sqrt{5-x^2}}\,x\,dx = \int \frac{1}{\sqrt{u}} \cdot \left(-\frac{1}{2}\right) du =$

$= -\frac{1}{2} \int u^{-1/2}\,du = -\frac{1}{2} \cdot \frac{1}{1+\left(-\frac{1}{2}\right)} \cdot u^{-\frac{1}{2}+1} + C$

$= -\sqrt{u} + C = -\sqrt{5-x^2} + C$

4) b) $\int (x+1) \cdot e^{-x}\,dx =$ PARCIÁLIS INT

$= (x+1) \cdot (-e^{-x}) - \int (-e^{-x})\,dx =$

$= -(x+1) \cdot e^{-x} - e^{-x} + C = -(x+2) \cdot e^{-x} + C$

4. OLDAL