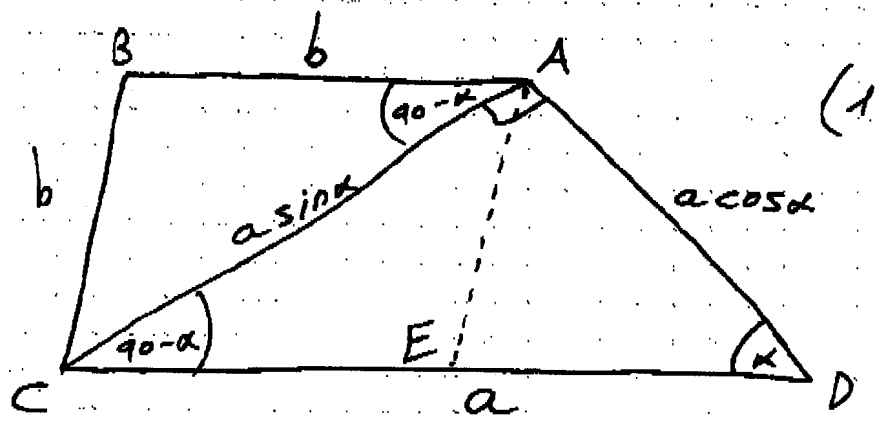


004 /lice



ΔACD (1) (1)

$(180^\circ - \angle ACD) \angle ACD = 90 - \alpha$

$(\text{interior}) \angle BAC = \angle ACD = 90 - \alpha$

ΔACD (2)

$AC = a \sin \alpha \Leftrightarrow \sin \alpha = \frac{AC}{a}$

$AD = a \cos \alpha \Leftrightarrow \cos \alpha = \frac{AD}{a}$

ΔBCA

cosine rule

$BC^2 = b^2 + a^2 \sin^2 \alpha - 2ba \sin \alpha \cdot \cos(90 - \alpha)$

$BC^2 = b^2 + a^2 \sin^2 \alpha - 2ab \sin^2 \alpha$

$BC = \sqrt{b^2 + a^2 \sin^2 \alpha - 2ab \sin^2 \alpha}$

1 sine rule

$$BC = \sqrt{b^2 + 4b^2 \sin^2 \alpha - 2 \cdot 2b \cdot b \sin \alpha} \Leftrightarrow a = 2b \quad (2)$$

$$BC = \sqrt{b^2}$$

$$BC = b \Rightarrow ABCE \text{ } \nearrow \text{ } \nearrow$$

$$S_{\Delta ABC} = \frac{b \cdot a \sin \alpha \cdot \sin(90 - \alpha)}{2}$$

$$S = \frac{a \cdot b \sin \alpha \cos \alpha}{2}$$

↓

$$S_{ABCE} = 2 \cdot \frac{a \cdot b \sin \alpha \cos \alpha}{2}$$

$$S = a \cdot b \sin \alpha \cos \alpha$$

$$\frac{a^2 \sqrt{3}}{8} = a \cdot b \sin \alpha \cos \alpha$$

$$4b^2 \frac{\sqrt{3}}{8} = 2b^2 \sin \alpha \cos \alpha$$

$$\frac{4 \cdot \sqrt{3}}{8} = 2 \sin \alpha \cos \alpha$$

$$60^\circ = \frac{\sqrt{3}}{2} = \sin(2\alpha)$$

$$2\alpha = 60 + 360^\circ k$$

$$2\alpha = 180 - 60 + 360^\circ k$$

$$\Leftrightarrow \alpha = 30 + 180^\circ k$$

$$\alpha = 60 + 180^\circ k$$

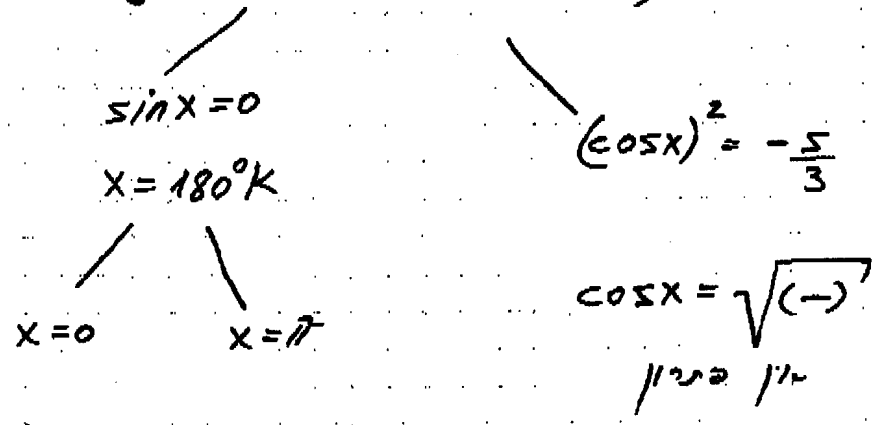
$$\alpha = 30^\circ$$

$$\alpha = 60^\circ$$

$$-\frac{\pi}{2} \leq x \leq \frac{3\pi}{2} \quad y = (\cos x)^3 + 5 \cos x \quad (2)$$

$$y' = 3(\cos x)^2 \cdot (-\sin x) + 5 \cdot (-\sin x) \quad (1)$$

$$y' = \sin x (-3(\cos x)^2 - 5) = 0$$

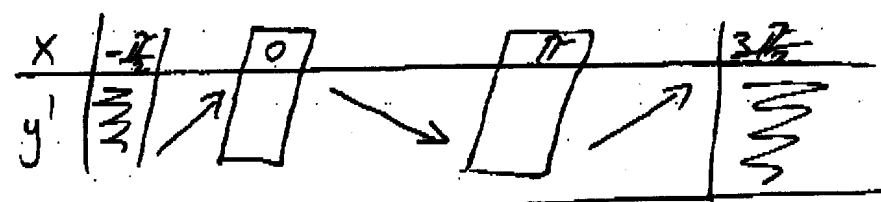


$$y\left(-\frac{\pi}{2}\right) = (\cos -90)^3 + 5 \cdot \cos(-90) = 0$$

$$y(0) = (\cos 0)^3 + 5 \cdot \cos 0 = 6$$

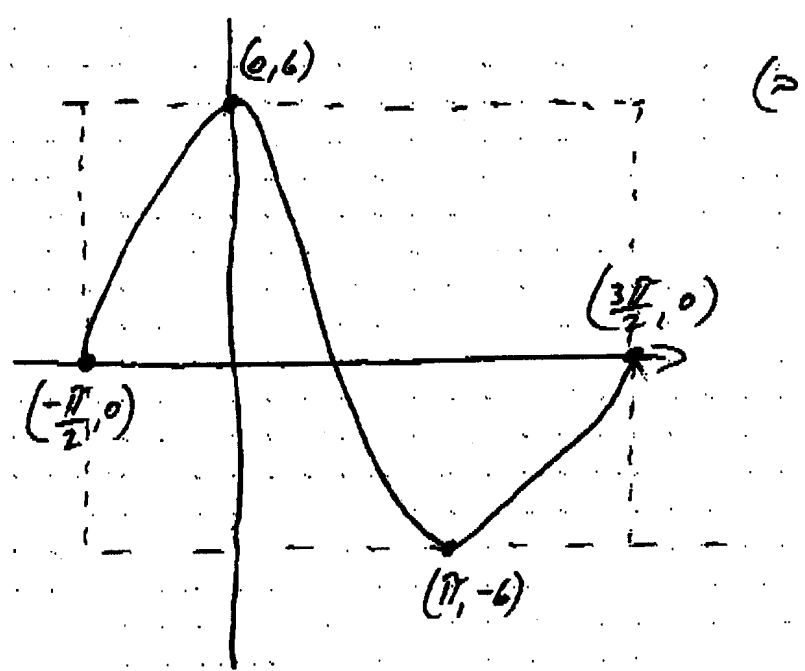
$$y(\pi) = (\cos 180)^3 + 5 \cos 180 = -6$$

$$y\left(\frac{3\pi}{2}\right) = (\cos 270)^3 + 5 \cos 270 = 0$$



$\left(-\frac{\pi}{2}, 0\right) \text{ min}, (0, 6) \text{ max}, (\pi, -6) \text{ min}, \left(\frac{3\pi}{2}, 0\right) \text{ max}$

המשך שאלה 2



(2) המרחק בין נק' קיצון אחת ל: 12 $(6+6)$

המרחק בין נק' הקצה: 2π $(\frac{\pi}{2} + \frac{3\pi}{2})$
 \Downarrow

מחזור $P = 2 \cdot 12 + 2 \cdot 2\pi$

$P = 24 + 4\pi$

(3) צ"ע סעיפים קודמים, קיבלנו נקודת מקסימום אחת $y=6$
התחום בתרגיל בינו מחזור שלם (360°) ,
ולכן אין פתרונות חשבוניים. כיוון y אינו יכול להיות 7

$$m > 0, \quad y = \frac{x^2 + 3m^2}{x - m} \quad (3)$$

תחום הגדרה $x \neq m$ (1) (1)

אסימטוטה אנכית: $x = m$ (2)

נקודת חיתוך עם ציר y : $x = 0 \Rightarrow y = \frac{3m^2}{-m} = -3m \Rightarrow (0, -3m)$

החיתוך של הנקודה עם הציר x הוא $3m$

$$3m = 3$$

$$m = 1$$

$$y = \frac{x^2 + 3}{x - 1} \quad (2)$$

$$y' = \frac{2x(x-1) - 1(x^2+3)}{(x-1)^2} = \frac{x^2 - 2x - 3}{(x-1)^2}$$

$$0 = x^2 - 2x - 3$$

3 -1

$$y(3) = \frac{3^2 + 3}{3 - 1} = \frac{12}{2} = 6$$

$$y(-1) = \frac{1 + 3}{-1 - 1} = \frac{4}{-2} = -2$$

תחום הגדרה $y'' = 2x - 2$

$$y''(3) = +$$

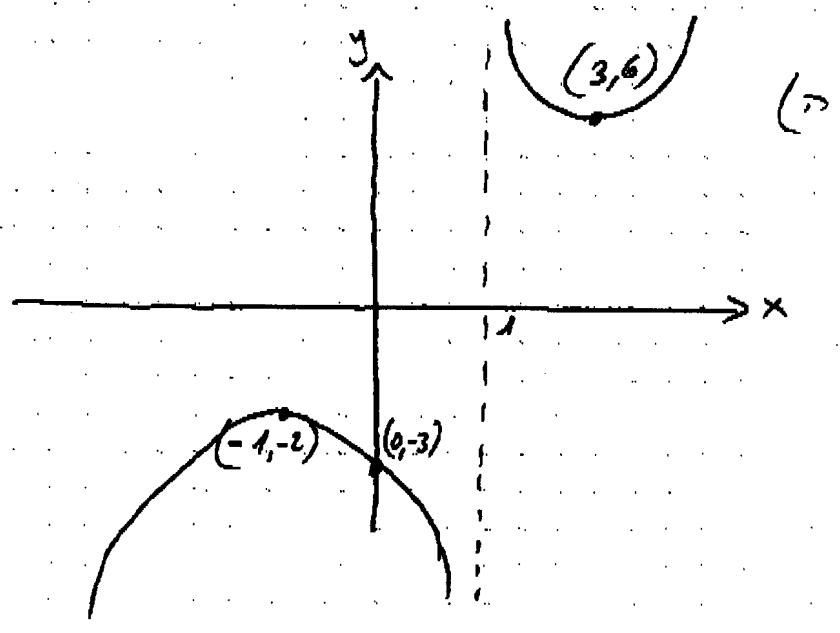
$$y''(-1) = -$$

$$\boxed{\begin{matrix} (3, 6) \text{ min} \\ (-1, -2) \text{ max} \end{matrix}}$$

3 פתור

$$y = \frac{0+3}{0-1} = \frac{3}{-1} = -3 : x=0 \Rightarrow y = -3 \text{ או } y=3 \quad (3)$$

$(0, -3)$



$$x \geq 0, \quad y = e^{2x-a} + 4\sqrt{x} \quad (4)$$

$$4 = y' = 2e^{2x-a} + \frac{4}{2\sqrt{x}} \Leftrightarrow x=1 \quad (1)$$

$M=4$

$$4 = 2e^{2-a} + \frac{2}{\sqrt{1}}$$

$$2 = 2e^{2-a}$$

$$e^{2-a} = 1$$

$$2-a=0 \Rightarrow \boxed{a=2}$$

$$y = e^{2x-2} + 4\sqrt{x} \quad (2)$$

$$S = \int_0^1 \left[(e^{2x-2} + 4 \cdot x^{0.5}) - (-1) \right] dx = \left[\frac{e^{2x-2}}{2} + \frac{4x^{1.5}}{1.5} + x \right]$$

$$= \left(\frac{e^{2-2}}{2} + \frac{4 \cdot 1^{1.5}}{1.5} + 1 \right) - \left(\frac{e^{-2}}{2} + 0 + 0 \right) =$$

$$= \frac{1}{2} + 2\frac{2}{3} + 1 - \frac{1}{2e^2} = 4\frac{1}{6} - \frac{1}{2e^2} = 4.0989$$

II 2ND

$$F = 0.71X$$

$$a = X$$

$$c =$$

$$t = 10$$

$$0.71X = X \cdot c^{10}$$

$$c = 0.96633$$

I 2ND

(5

$$F = 0.83X$$

$$a = X$$

$$c =$$

$$t = 12$$

$$0.83X = X \cdot c^{12}$$

$$0.98459 = c$$

$$I \text{ 2ND } F = 3 \cdot F_{II \text{ 2ND}}$$

$$X \cdot 0.98459^t = 3 \cdot X \cdot 0.96633^t$$

$$\left(\frac{0.98459}{0.96633}\right)^t = 3$$

$$1.0188^t = 3 \Rightarrow t = \frac{\ln 3}{\ln 1.0188}$$

$$t = 58.686$$

AJU