

1

a_n - סדרה חשבונית

$$a_1 = 0$$

$$d = 4$$

$$b_n = a_n + 8n$$

ב) הוכח - סדרה חשבונית

$$b_{n+1} - b_n = a_{n+1} + 8(n+1) - (a_n + 8n)$$

$$= a_{n+1} + 8n + 8 - a_n - 8n$$

$$= \underbrace{a_{n+1} - a_n}_{\substack{11 \\ 4}} + 8 = 12$$

(נכון a_n סדרה חשבונית -
שיעורה 4)

$$\boxed{b_{n+1} - b_n = 12} \quad \underline{\text{לפי כ'}}$$

$$\Rightarrow c_n = a_n + b_n$$

$$c_{n+1} - c_n = a_{n+1} + b_{n+1} - (a_n + b_n)$$

$$= \underbrace{a_{n+1} - a_n}_{\substack{11 \\ 4}} + \underbrace{b_{n+1} - b_n}_{12} = 16$$

$$\boxed{c_{n+1} - c_n = 16} \quad \underline{\text{לפי כ'}}$$

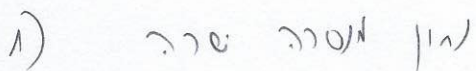


$$e) C_1 = \frac{1}{2}$$

$$\Rightarrow b_1 = C_1 + 8 \cdot 1 = \frac{1}{2} + 8 = 8.5$$

$$\boxed{C_1 = C_1 + b_1 = \frac{1}{2} + 8.5 = 9} \quad \underline{\underline{17 \text{ Kl}}}$$

$$\begin{array}{l} 2770 \\ \text{in} \end{array} S_{20} = \left[2 \cdot 9 + 19 \cdot 16 \right] \cdot \frac{20}{2} = \underline{\underline{3220}} \quad \underline{\underline{27 \text{ Kl}}}$$



3) $CD = DB$ | m |

c) $AD = 12 \text{ cm}$ (10)

7) $\angle CAD = \angle BAD = 70^\circ$ ((א' 2, 3, 6 + זווית חסות בלתי שווה 70°)
 חלק ג' 15 - השווה.

$$\frac{CD}{12} = \lg 20 \Rightarrow \boxed{CD = 12 \cdot \lg 20 = 4,30}$$

9) $CB = 2 \cdot 4,36 = 8,735$ (округл + 8,3 др)

10) AA — מה ש?

11) $\angle AAB = \angle AAC = 90^\circ$ ((כ"י 1 + ג'סרה סרה

12) $\triangle BAA \cong \triangle CAA$ ((כ"י 1, 10, 11 + ג'סרה 3.5.3

13) $\angle B = \angle C$
= כ"י 12 + ג'סרה 12

14) $S_{\triangle CAB} = 80$ (כ"י)

15) $AD \perp CB$ ((כ"י 3, 13 + ג'סרה 1.80

16) $\frac{AD \cdot 8.735}{2} = 80$ ((כ"י 9

$\Rightarrow AD = 18.317$

17) כל כ"י שר ושור הא האל — סכן הטר (AD)
אכן האל הטר (AD)

$\angle ADA$

$\triangle AAD$

$\frac{AD}{AD} = \cos \angle ADA \Rightarrow \frac{12}{18.317} = \cos \angle ADA$

$\Rightarrow \angle ADA = 49.07^\circ$ (כ"י)

18) $AA = \sqrt{18.317^2 - 12^2} = 13.838$ (כ"י כ"סגורס)

19) $V = S_{\triangle ABC} \cdot AA = \frac{8.735 \cdot 12}{2} \cdot 13.838 = 725.25$ (כ"י)

3

$$\hat{f}(x) = -3 \sin 2x$$

$$0 \leq x \leq \pi$$

$$f(0) = 0.75$$

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1/2 16/12

$$i) f(x) = \int \hat{f}(x) dx = \int -3 \sin 2x dx = \frac{3 \cos 2x}{2} + c$$

$$f(0) = 0.75 \Rightarrow \frac{3 \cdot \cos 0}{2} + c = 0.75 \Rightarrow \boxed{c = -0.75}$$

$$\boxed{f(x) = \frac{3}{2} (\cos 2x - 0.75)} \quad \text{1/2 R!}$$

2) x 17 28 11/12

$$y = 0$$

$$\Rightarrow \frac{3}{2} \cos 2x - 0.75 = 0$$

$$\Rightarrow \cos 2x = 0.5$$

$$2x = \frac{\pi}{3} + 2\pi k / :2$$

$$\boxed{x = \frac{\pi}{6} + \pi k}$$

$$2x = -\frac{\pi}{3} + 2\pi k / :2$$

$$\boxed{x = -\frac{\pi}{6} + \pi k}$$

$$k=0 \quad x = \frac{\pi}{6} \quad \checkmark$$

$$k=1 \quad \emptyset$$

$$x = -\frac{\pi}{6} \quad \emptyset$$

$$x = \frac{5\pi}{6} \quad \checkmark$$

$$\boxed{\left(\frac{\pi}{6}, 0\right); \left(\frac{5\pi}{6}, 0\right)}$$

1/2 R!

↙

2)

$$\underline{1,1 \quad 1,1 \quad -1,3N}$$

$$\hat{f}(x) = 0 \Rightarrow -3 \sin 2x = 0$$

$$\sin 2x = 0$$

$$2x = \pi k \quad \boxed{x = \frac{\pi}{2} k}$$

$$k=0 \quad x=0$$

$$k=1 \quad x = \frac{\pi}{2}$$

$$k=2 \quad x = \pi$$

$$\Rightarrow f(0) = 0,75 \Rightarrow (0, 0,75)$$

$$\Rightarrow f\left(\frac{\pi}{2}\right) = \frac{3}{2} \cos \pi - 0,75 = -2,25$$

$$f(0) = 0,75 \Rightarrow (0, 0,75)$$

$$f\left(\frac{\pi}{2}\right) = \frac{3}{2} \cos \pi - 0,75 = -2,25 \Rightarrow \left(\frac{\pi}{2}, -2,25\right)$$

$$f(\pi) = \frac{3}{2} \cos 2\pi - 0,75 = 0,75 \Rightarrow (\pi, 0,75)$$

$$\boxed{\hat{f}(x) = -6 \cos 2x}$$

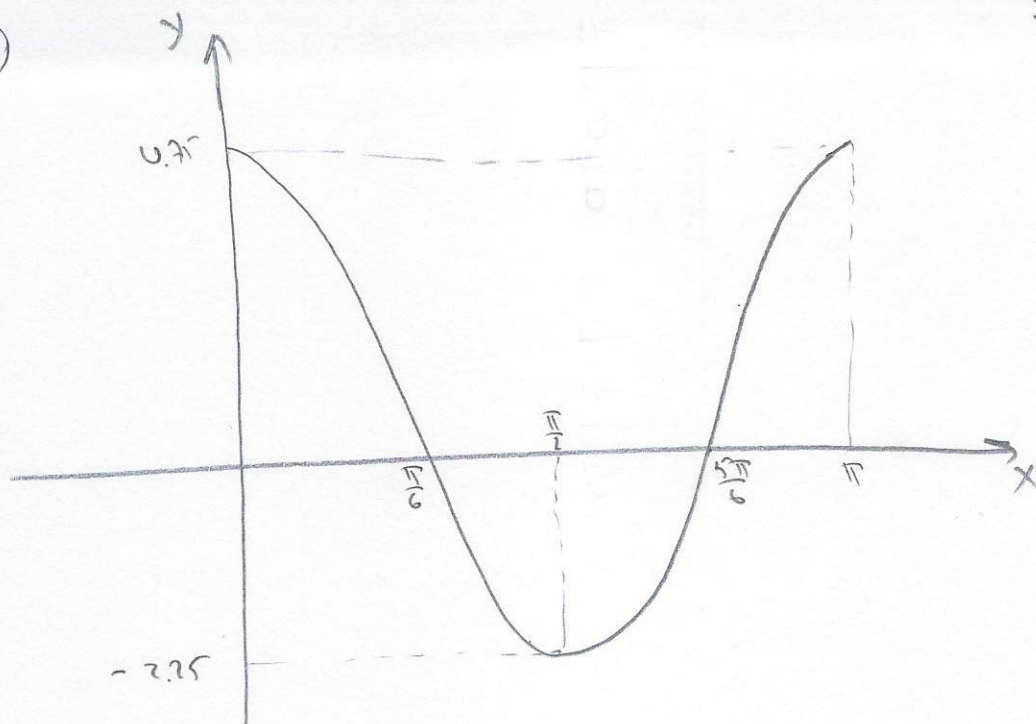
$$\hat{f}(0) = -6 < 0 \Rightarrow \boxed{\max(0, 0,75)}$$

$$\hat{f}\left(\frac{\pi}{2}\right) = -6 \cos \pi = 6 > 0 \Rightarrow \boxed{\min\left(\frac{\pi}{2}, -2,25\right)}$$

$$\hat{f}(\pi) = -6 \cos 2\pi = -6 < 0 \Rightarrow \boxed{\max(\pi, 0,75)}$$



7)



$$7) \quad S = \int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} \left\{ 0 - \left[\frac{3}{2} \cos 2x - 0.75 \right] \right\} dx = \int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} \left(-\frac{3}{2} \cos 2x + 0.75 \right) dx$$

$$= \left[-\frac{3 \sin 2x}{4} + 0.75x \right]_{\frac{\pi}{6}}^{\frac{5\pi}{6}} =$$

$$= -\frac{3 \sin \frac{5\pi}{3}}{4} + 0.625\pi - \left[-\frac{3 \sin \frac{\pi}{3}}{4} + 0.125\pi \right]$$

$$= \frac{3\sqrt{3}}{8} + 0.625\pi + \frac{3\sqrt{3}}{8} - 0.125\pi$$

$$= \frac{6\sqrt{3}}{8} + 0.5\pi = \underline{\underline{7.869}}$$

$$(4) f(x) = -3e^x(2e^x - 4)$$

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a) הנגזרת
 $\boxed{x \text{ של } f}$

b) הנגזרת של 0

$$y=0 \Rightarrow -3e^x(2e^x - 4) = 0$$

$$x \text{ של } e^x > 0 \Rightarrow 2e^x - 4 = 0$$

$$e^x = 2 \Rightarrow x = \ln 2 \Rightarrow \boxed{(\ln 2, 0)}$$

הנגזרת של 0

$$x=0 \Rightarrow f(0) = -3e^0(2e^0 - 4) = -3 \cdot (2 - 4) = 6$$

$$\boxed{(0, 6)}$$

c) $\hat{f}(x) = -3e^x(2e^x - 4) - 3e^x \cdot 2e^x$

הנגזרת של 0

$$\boxed{\hat{f}(x) = -12e^{2x} + 12e^x}$$

$$\hat{f}(x) = 0 \Rightarrow -12e^{2x} + 12e^x = 0 \Rightarrow -12e^x(e^x - 1) = 0$$

$$x \text{ של } e^x > 0 \Rightarrow e^x - 1 = 0 \Rightarrow e^x = 1 \Rightarrow x = 0$$

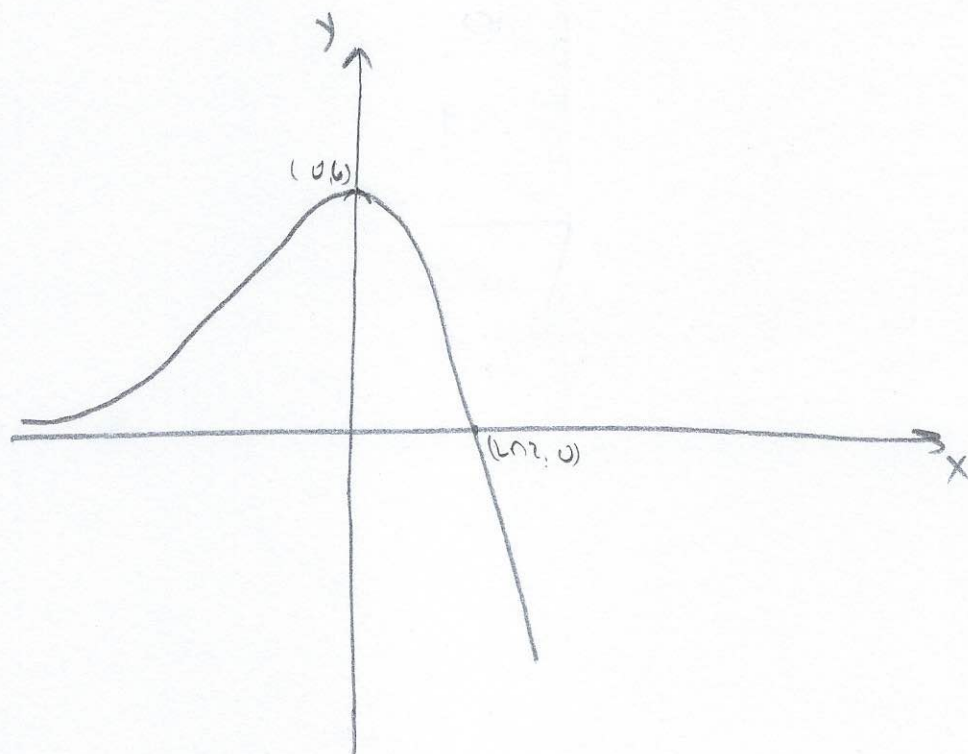
$$\Rightarrow f(0) = 6 \Rightarrow (0, 6)$$

$$\boxed{\hat{\hat{f}}(x) = -24e^{2x} + 12e^x}$$

$$\hat{\hat{f}}(0) = -24 + 12 = -12 < 0 \Rightarrow \boxed{\max(0, 6)}$$

4 של

3)

21.70

1) $g(x) = -\frac{1}{2}f(x)$

1.

21.71

$$\boxed{g'(x) = -\frac{1}{2}f'(x)}$$

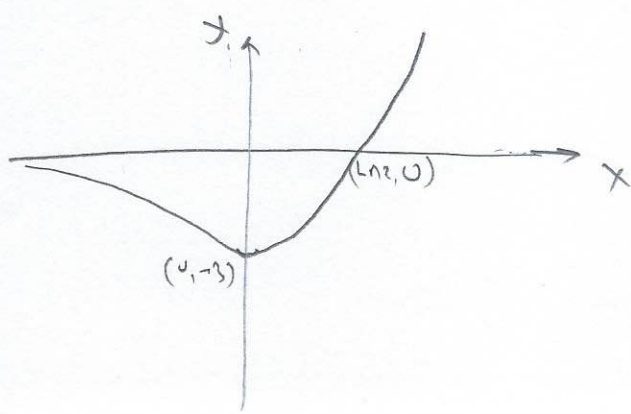
$$g'(x) = 0 \Rightarrow -\frac{1}{2}f'(x) = 0 \Rightarrow f'(x) = 0 \Rightarrow x = 0 \leftarrow \begin{pmatrix} 60 \\ 7 \end{pmatrix}$$

$$g(0) = -\frac{1}{2}f(0) = -\frac{1}{2} \cdot 6 = -3 \Rightarrow (0, -3)$$

$$\boxed{g''(x) = -\frac{1}{2}f''(x)}$$

$$g''(0) = -\frac{1}{2}f''(0) = -\frac{1}{2} \cdot (-12) = 6 > 0 \Rightarrow \boxed{\text{min}(0, -3)} \quad \underline{\underline{\text{1.71 per}}}$$

2.

g(x) 21.70

5

$$f(x) = \ln(-x^2 + ax)$$

$$\begin{cases} 0 < x < a \\ a > 0 \end{cases}$$

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(1) 11.7 x 13.1

$$\boxed{f'(x) = \frac{-2x + a}{-x^2 + ax}}$$

$$f'(x) = 0 \Rightarrow -2x + a = 0 \Rightarrow x = \frac{a}{2}$$

$$\boxed{11.7x = \frac{a}{2}} \quad \text{1/2 781N}$$

2) $f'(x) = \ln \frac{a}{4}$ 11.7

$$\Rightarrow f\left(\frac{a}{2}\right) = \ln \frac{a}{4}$$

$$\Rightarrow \ln \left[-\frac{a^2}{4} + \frac{a^2}{2} \right] = \ln \frac{a}{4}$$

$$\Rightarrow \frac{a^2}{4} = \frac{a}{4} \Rightarrow a^2 = a \Rightarrow a = \pm 3$$

11.7 $a > 0 \Rightarrow \boxed{a = 3}$ 1/2 781N

3) $f(x) = \ln(-x^2 + 3x)$

$$\boxed{f'(x) = \frac{-2x + 3}{-x^2 + 3x}}$$

$$11.7x = \frac{3}{2}$$

כדי למצוא את הנקודה המקסימלית של הפונקציה, נגזור את הפונקציה ונשווה את הנגזרת לאפס.

$$f''(x) = -2 < 0 \Rightarrow \boxed{\max\left(\frac{3}{2}, \ln \frac{3}{4}\right)}$$

הנקודה המקסימלית היא $\left(\frac{3}{2}, \ln \frac{3}{4}\right)$.
11.7 1/2 781N

3) 1.

$$\frac{x \ln(-x^2+3x)}{-6 \ln 1}$$

$$y=0 \Rightarrow \ln(-x^2+3x) = 0$$

$$\Rightarrow -x^2+3x = e^0 \Rightarrow x^2-3x+1=0$$

$$x_{1,2} = \frac{3 \pm \sqrt{5}}{2}$$

$$\rightarrow x_1 = 2.61$$

$$\rightarrow x_2 = 0.38$$

$$\Rightarrow \begin{pmatrix} (2.61, 0) \\ (0.38, 0) \end{pmatrix}$$

2.

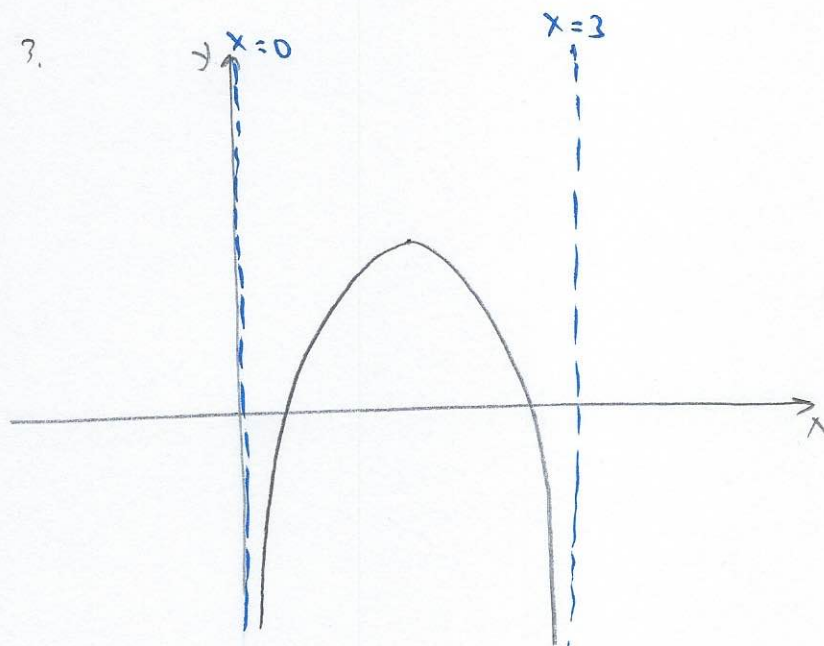
$$\frac{x \ln(-x^2+3x)}{-6 \ln 1}$$

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

$$x(-x+3)=0$$

$$\begin{pmatrix} x_1=0 \\ x_2=3 \end{pmatrix}$$

3.



2.70