

305

$$a_1 \cdot (a_1 + 3d) = (a_1 + d)^2$$

dik (1)

$$a_1^2 + 3a_1d = a_1^2 + 2a_1d + d^2$$

$$a_1d - d^2 = 0$$

$$d(a_1 - d) = 0$$

$$\begin{array}{l} \swarrow d \neq 0 \\ \searrow a_1 = d \end{array}$$

misal saja
dik misal

$$a_1 + 3d, a_1 + 5d, a_1 + 8d$$

11) ...

$$4d, 6d, 9d$$

$$q = \frac{6d}{4d} = \underline{1.5}$$

$$4d + 6d + 9d = 133$$

(2)

$$19d = 133$$

$$\boxed{d = 7}$$

$$a_1 = d = 7$$

(3)

$$S_n = \frac{n(2 \cdot 7 + (n-1) \cdot 7)}{2} > 11,977$$

$$n(7n + 7) > 23954$$

$$7n^2 + 7n - 23954 > 0$$

$$n < -59 \quad \text{atau} \quad 58 < n$$

$$\boxed{n = 59}$$

805

$$\cos 75^\circ = \frac{0.5a}{SE}$$

(1) \cdot (2)

$$SE = \frac{0.5a}{\cos 75^\circ} = \underline{1.332a}$$

$$S_{\text{total}} = \frac{1.332a \cdot a}{2} = 0.966a^2 \quad (2)$$

$$M = 4S_{\text{total}} = \underline{3.864a^2}$$

$$\tan 75^\circ = \frac{SO}{0.5a}$$

.2

$$SO = 0.5a \cdot \tan 75^\circ = 1.866a$$

$$FO = \frac{1}{3} \cdot SO = \frac{1}{3} \cdot 1.866a = 0.622a$$

$$OC = 0.707a$$

$$\tan \angle FCO = \frac{0.622a}{0.707a} = \underline{41.34^\circ}$$

805

1% (3)

$$M_0 = 10,000$$

$$q_r = 1.02$$

$$t = 12$$

$$M_t = M_0 \cdot q_r^t = 10,000 \cdot 1.02^{12} = 12682.42$$

$$M_0 = 12682 - 5000 = 7682$$

$$q_r = 1.02$$

$$t = t$$

$$M_t = 10,000$$

$$M_t = M_0 \cdot q_r^t$$

$$10,000 = 7,682 \cdot 1.02^t$$

$$\frac{10,000}{7,682} = 1.02^t$$

$$1.302 = 1.02^t$$

$$t = \log_{1.02} 1.302 = 13.33$$

$$\boxed{13.33} = 13 \text{ years}$$

$$f'(x) = \frac{-3}{2x^2} + \frac{2}{3} = 0$$

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

$$4x^2 = 9$$

$$x^2 = \frac{9}{4}$$

$$x = 1.5$$

$$f(1.5) = \frac{3}{2 \cdot 1.5} + \frac{2 \cdot 1.5}{3} = 2$$

$$S_{f(1)} = 1 \times \frac{1}{6} = \frac{1}{6}$$

$$S_{f(x)} = \int_1^{1.5} \left[\frac{3}{2x} + \frac{2x}{3} - 2 \right] dx = \left[\frac{3}{2} \ln x + \frac{x^2}{3} - 2x \right]_1^{1.5}$$

$$= (-1.642) - \left(-1 \frac{2}{3}\right) = 0.025$$

$$S_{f(0)} = S_{f(1)} + S_{f(x)} = \frac{1}{6} + 0.025 = \boxed{0.152}$$

805

$$f'(x) = 2 \cdot 2 \cdot \sin(2x) = 0$$

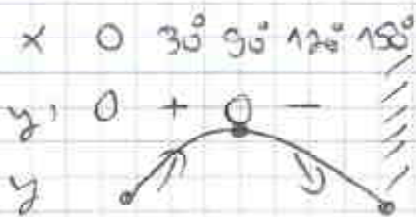
• 1. (4)

$$\sin(2x) = 0$$

$$2x = 0^\circ + 360^\circ k \quad 2x = 180^\circ + 360^\circ k$$

$$x = 180^\circ k, \quad x = 90^\circ + 180^\circ k$$

$$x = 0, 90^\circ \quad ; \quad 0^\circ \leq x \leq 180^\circ \quad \text{and } 21$$



$$f(0) = -2 \cos(2 \cdot 0) + a = a - 2$$

$$f(90^\circ) = -2 \cos(2 \cdot 90^\circ) + a = a + 2$$

$$f(180^\circ) = -2 \cos(2 \cdot 180^\circ) + a = a - 2$$

$(\frac{\pi}{2}, a+2)$ (Tiefpunkt)
$(0, a-2)$ (Tiefpunkt)

$$a - 2 = 3$$

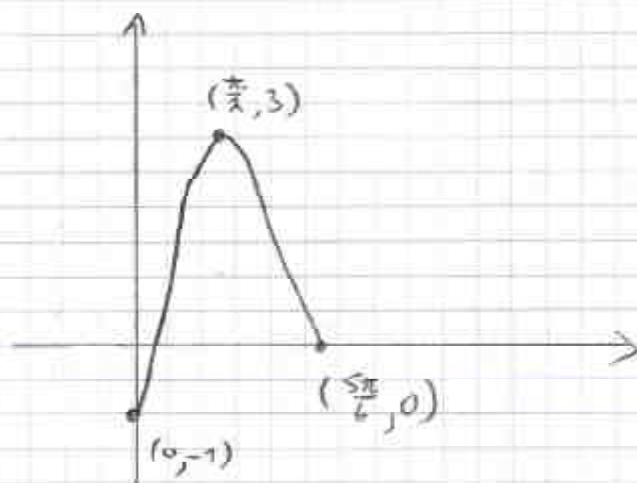
$$a + 2 = 3$$

~~$$a = 5$$~~

$$\boxed{a = 1}$$

$\therefore 0 < a < 2 \rightarrow \text{falsch}$

805



$$S = \int_0^{\frac{\pi}{2}} [3 - (-2\cos(2x) + 1)] dx =$$

$$= \int_0^{\frac{\pi}{2}} [2 + 2\cos(2x)] dx = \left[2x + \frac{2\sin(2x)}{2} \right]_0^{\frac{\pi}{2}}$$

$$= \left[\frac{\pi}{2} + \sin\left(\frac{\pi}{2}\right) \right] - [2 \cdot 0 + \sin(2 \cdot 0)] =$$

$$= [\pi + 0] - [0 + 0] = \boxed{\pi}$$

5 א.ל.א. x

$$\begin{array}{l|l} f = (a-3x) & f' = -3 \\ \hline g = e^{3x} & g' = 3e^{3x} \end{array} \quad \text{ב. נמצא את הנקודה המקסימלית}$$

$$y' = -3e^{3x} + 3e^{3x}(a-3x)$$

$$y' = -3e^{3x}(1-a+3x) = 0$$

$$1-a+3x = 0$$

$$3x = a-1$$

$$x = \frac{a-1}{3} = 1$$

$$a-1 = 3$$

$$\boxed{a=4}$$

x	0	1	2
y'	+	0	-
y	↗		↘

$$y = (4-3x) \cdot e^{3x} \quad \text{א. (1)}$$

$$y' = -3e^{3x}(3x-3)$$

$$y'(0) = 9 > 0$$

$$y'(2) = -9 < 0$$

$$\left. \begin{array}{l} x < 1 : \text{הפונקציה עולה} \\ x > 1 : \text{הפונקציה יורדת} \end{array} \right\}$$

$(1, e^3)$: נקודה מקסימלית

$$y(1) = e^3 = 20.08$$

$$\boxed{(0, 4)}$$

(2) נקודה מינימלית $y=4$: $x=0$: y יורד

$$0 = (4-3x) \cdot e^{3x}$$

$$: y=0$$

$$: x$$

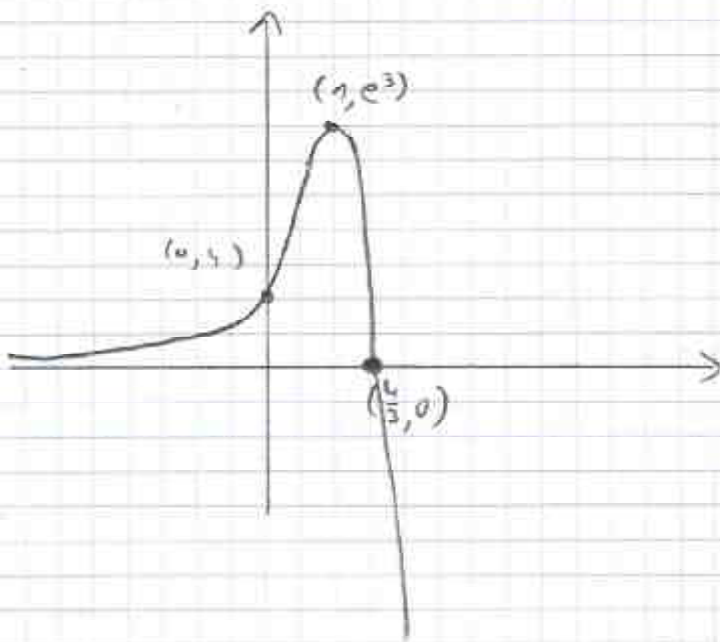
$$: y$$

$$: x$$

$$x = \frac{4}{3}$$

$$\boxed{\left(\frac{4}{3}, 0\right)}$$

(3)



(3) לר פיר - אינן אנל אר פיר, אר פיר.