

.a , ABCDE
 . $\angle SEO = 75^\circ$ SE OE . OE = $\frac{a}{2}$ ΔABC - OE

ΔSEO

$$\cos 75^\circ = \frac{OE}{SE}$$

$$SE = \frac{a}{2 \cos 75^\circ}$$

$$\boxed{SE = 1.932a}$$

. SE = 1.932a :

. BC - , BC SE (2)

4

$$S_{\Delta SBC} = \frac{BC \cdot SE}{2}$$

$$S_{\Delta SBC} = \frac{a \cdot 1.932a}{2}$$

$$S_{\Delta SBC} = 0.9659a^2$$

$$\boxed{M = 3.8637a^2}$$

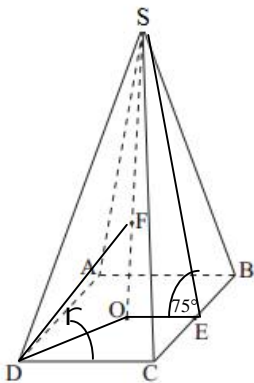
. $3.8637a^2$:

: ΔSEO - ,

$$(SO)^2 = (1.932a)^2 - (0.5a)^2$$

$$SO = 1.8662a \quad /:3$$

$$FO = 0.6221a$$



. ΔDBC -

$$, DO = \frac{a\sqrt{2}}{2} -$$

. $\angle FDO = ?$ DF DO

ΔFDO

$$\tan r = \frac{FO}{DO}$$

$$\tan r = \frac{0.6221a}{a\sqrt{2}/2}$$

$$\boxed{r = 41.34^\circ}$$

. 41.34°

SABCD

:

• $0 < a < 2$, $0 \leq x \leq \frac{5}{6}f$ $f(x) = -2 \cos(2x) + a$ •

• $(\frac{5f}{6}, a-1)$, $(0, a-2)$:

$f'(x) = 4 \sin 2x$

$\sin 2x = 0$

$2x = f k$

$x = \frac{f}{2} k$

$k = 0 \rightarrow x = 0 \rightarrow edge$

$k = 1 \rightarrow x = \frac{f}{2} \rightarrow f(\frac{f}{2}) = -2 \cos(2 \cdot \frac{f}{2}) + a = a + 2 \rightarrow (\frac{f}{2}, a + 2)$

: ,

x	0		$\frac{f}{2}$		$\frac{5f}{6}$
y	a-2		a+2		a-1
	Min	↖	Max	↘	Min

• $a-2 < a-1 < a+2$:

• $(\frac{f}{2}, a+2)$, $(0, a-2)$:

-x , 0 • y=3 •

• $x = \frac{f}{2}$ - $x = 0$ •

• $(0 \leq x \leq \frac{5}{6}f)$) - $x = 0$

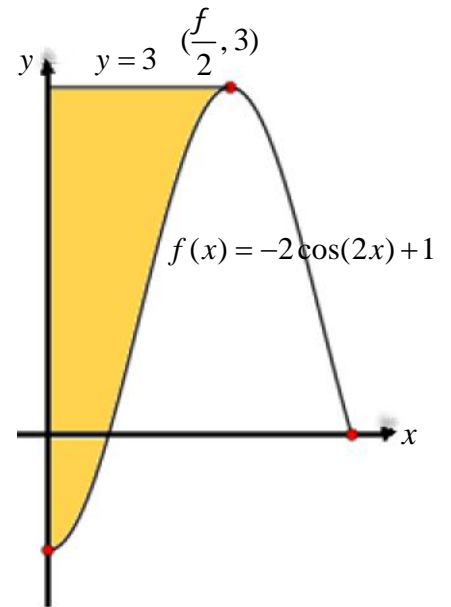
• $0 < a < 2$ $a = 5$ $a - 2 = 3$

• , $a = 1$ - $a + 2 = 3$ - $x = \frac{f}{2}$

• $a = 1$:

$$f(x) = -2\cos(2x) + 1$$

$$a = 1$$



$$f(x) = -2\cos(2x) + 1$$

:

$$3 - (-2\cos(2x) + 1) = 3 + 2\cos(2x) - 1 = 2 + 2\cos(2x)$$

$$S = \int_0^{\frac{f}{2}} (2 + 2\cos(2x)) dx$$

$$S = \left(2x + \frac{2\sin 2x}{2} \right) \Big|_0^{\frac{f}{2}}$$

$$S = \left(2 \cdot \frac{f}{2} + \sin\left(\frac{2f}{2}\right) \right) - (2 \cdot 0 + \sin(0))$$

$$S = (f) - (0)$$

$$\boxed{S = f}$$

$$f$$

:

$$f(x) = \frac{x^2 - 5}{x + 3} \quad (1)$$

$$x \neq -3$$

$$(\quad , \quad) \quad (2)$$

$$: \quad , \quad f(-100) = -103 \rightarrow -\infty, \quad f(100) = 97 \rightarrow +\infty$$

$$x = -3 : \quad , \quad f(-2.99) = 394 \rightarrow +\infty, \quad f(-3.01) = -406 \rightarrow -\infty$$

$$(0, -1\frac{2}{3}) \quad x = 0 \quad y = -$$

$$\pm\sqrt{5} \quad 0 = x^2 - 5 : y = 0 \quad x =$$

$$(-\sqrt{5}, 0), (\sqrt{5}, 0), (0, -1\frac{2}{3}) :$$

$$x = -3 \quad - y = \quad x = -3 \quad (3)$$

$$(1) \quad (2) \quad - x =$$

$$x = -3 :$$

$$(4)$$

$$f'(x) = \frac{2x(x+3) - (x^2 - 5)}{(x+3)^2}$$

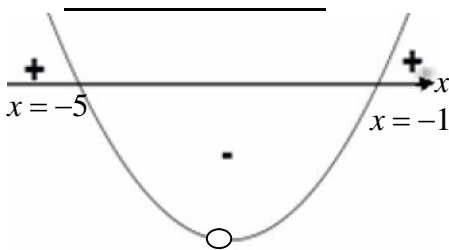
$$f'(x) = \frac{2x^2 + 6x - x^2 + 5}{(x+3)^2}$$

$$f'(x) = \frac{x^2 + 6x + 5}{(x+3)^2}$$

$$0 = x^2 + 6x + 5 = (x+1)(x+5)$$

$$x = -1 \rightarrow y = \frac{(-1)^2 - 5}{-1 + 3} = -2 \rightarrow (-1, -2)$$

$$x = -5 \rightarrow y = \frac{(-5)^2 - 5}{-5 + 3} = -10 \rightarrow (-5, -10)$$



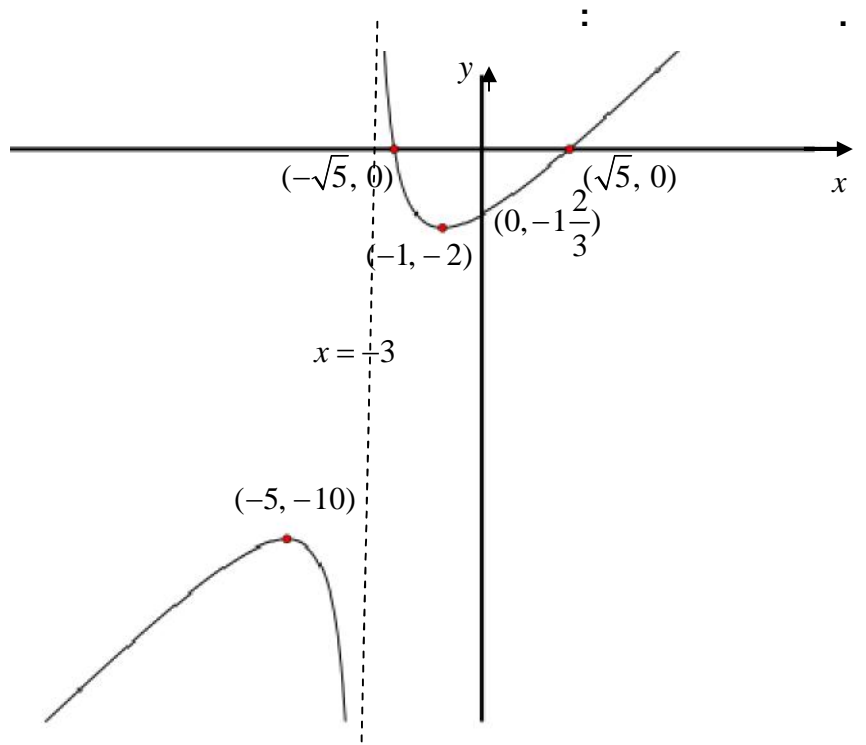
$$(x = -3 \quad)$$

$$x = -1$$

$$x = -5$$

$$(-5, -10), \quad (-1, -2) :$$

"



$$f'(x) = \frac{x^2 + 6x + 5}{(x+3)^2}$$

$$x = -3 \quad - \quad y = 1 \quad x = -3 \quad \text{(1)}$$

x^2

$$y = 1, \text{ (2)}$$

- x -

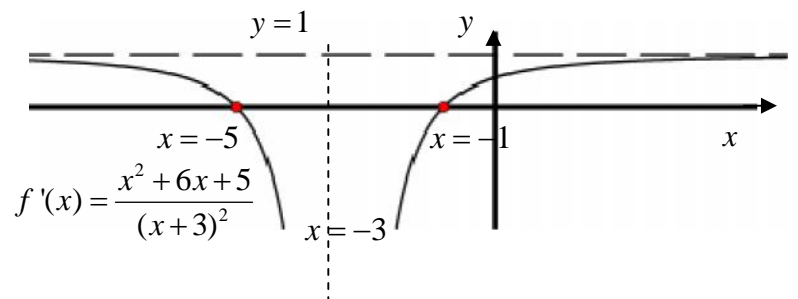
$$y = 1$$

$$y = 1, x = -3 :$$

$$\text{(4)} \quad - \quad \text{(2)}$$

$$-5 < x < -3 \quad -3 < x < -1 : \quad , x < -5 \quad x > -1 : \quad :$$

$$\text{(3)}$$



35004

14

$$- M_0 \quad , \quad M_t = M_0 \cdot q^t :$$

$$.t \quad M_t , \quad q$$

$$. q = \frac{100+2}{100} = 1.02 , 2\%$$

10,000

$$. 10,000 \cdot 1.02^{12} = 12,682.42 \quad (\quad) \quad 12 \quad ,$$

$$. 7,682.42 \quad 5,000$$

$$. 10,000$$

$$10,000 = 7,682.42 \cdot 1.02^t \quad / : 7,682.42$$

$$1.3017 = 1.02^t$$

$$\ell_{\text{n}} 1.3017 = \ell_{\text{n}} 1.02^t$$

$$\ell_{\text{n}} 1.3017 = t \ell_{\text{n}} 1.02$$

$$\frac{\ell_{\text{n}} 1.3017}{\ell_{\text{n}} 1.02} = t$$

$$\boxed{t = 13.31}$$

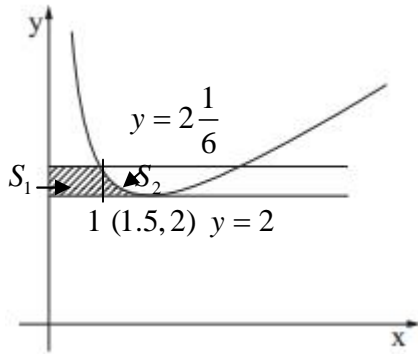
$$1.3017 = 1.02^t$$

$$t = \log_{1.02} 1.3017$$

$$t = \frac{\log 1.3017}{\log 1.02} = 13.31$$

$$. 10,000$$

13.31



• $x > 0$ $f(x) = \frac{3}{2x} + \frac{2x}{3}$

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

$0 = -\frac{3}{2x^2} + \frac{2}{3} \rightarrow 0 = -9 + 4x^2$

$x = 1.5 \leftarrow x > 0$

$f''(x) = +\frac{6x}{2x^4}$ $\rightarrow f''(1.5) = \frac{6 \cdot 1.5}{2 \cdot 1.5^4} > 0 \rightarrow \text{Min}$

• $f(1.5) = \frac{3}{2 \cdot 1.5} + \frac{2 \cdot 1.5}{3} = 2 : y -$

• $y = 2$ (1.5, 2)

• $y = 2\frac{1}{6}$ $x -$

$2\frac{1}{6} = \frac{3}{2x} + \frac{2x}{3} \quad /: 6x \rightarrow 13x = 9 + 4x^2$

$4x^2 - 13x + 9 = 0 \rightarrow x_{1,2} = \frac{13 \pm 5}{8} \rightarrow x = 2.25, 1$

• $y -$ $x = 1$

• $1 \cdot \frac{1}{6} = \frac{1}{6} :$ • $1 - 0 = 1$ $2\frac{1}{6} - 2 = \frac{1}{6}$, S_1

• $1 \leq x \leq 1.5$,

$S_2 = \int_1^{1.5} \left(\frac{3}{2x} + \frac{2x}{3} - 2 \right) dx$

$S_2 = \left[\frac{3 \ln|2x|}{2} + \frac{x^2}{3} - 2x \right]_1^{1.5}$

$S_2 = \left(\frac{3 \ln|2 \cdot 1.5|}{2} + \frac{1.5^2}{3} - 2 \cdot 1.5 \right) - \left(\frac{3 \ln|2 \cdot 1|}{2} + \frac{1^2}{3} - 2 \cdot 1 \right)$

$S_2 = \left(1.5 \ln 3 - \frac{9}{4} \right) - \left(1.5 \ln 2 - \frac{5}{3} \right) = -0.602 - (-0.6269)$

$S_2 = 1.5 \ln 1.5 - \frac{7}{12} \approx 0.02486$ \rightarrow $S = 0.02486 + \frac{1}{6} = 0.1915$

• $1.5 \ln 1.5 - \frac{5}{12} \approx 0.1915$:

"

$$f(x) = (a - 3x)e^{3x}$$

$$f'(1) = 0$$

$$f'(x) = -3e^{3x} + (a - 3x) \cdot 3e^{3x}$$

$$0 = -3e^3 + (a - 3)3e^3 \quad /: 3e^3 > 0$$

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

$$\boxed{a = 4}$$

$$a = 4 :$$

$$f(x) = (4 - 3x)e^{3x} \quad a = 4$$

$$, f(-10) = 3.18 \cdot 10^{-12} \rightarrow +0, \quad f(10) = -2.78 \cdot 10^{14} \rightarrow -\infty :$$

$$x \rightarrow -\infty$$

$$y = 0$$

(1)

$$f'(x) = -3e^{3x} + (4 - 3x) \cdot 3e^{3x}$$

$$f'(x) = 3e^{3x}(-1 + 4 - 3x)$$

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

$$0 = 3 - 3x \quad (3e^{3x} > 0)$$

$$x = 1 \rightarrow y = (4 - 3 \cdot 1)e^{3 \cdot 1} = e^3$$

$$\left. \begin{aligned} f'(0) &= (+) \cdot (3 - 3 \cdot 0) > 0 \\ f'(2) &= (+) \cdot (3 - 3 \cdot 2) < 0 \end{aligned} \right\} (1, e^3) \text{ Max}$$

$$x < 1, \quad x > 1 :$$

(2)

$$y = (4 - 3 \cdot 0)e^{3 \cdot 0} = 4 \rightarrow (0, 4) \quad x = 0$$

$$y = 0 \quad x =$$

$$0 = (4 - 3x)e^{3x} \quad /: e^{3x} > 0$$

$$0 = 4 - 3x$$

$$x = 1\frac{1}{3} \rightarrow (1\frac{1}{3}, 0)$$

$$(1\frac{1}{3}, 0), (0, 4) :$$

(3)

$$x = \quad y = k$$

$$k \leq 0$$

