

$b_n$	$a_n$	
$b_1 = a_1$	$a_1$	
$d+1$	$d$	
$n$	$n$	

$$b_3 + 2 = a_4 :$$

$$b_3 - 2 = a_4$$

$$b_3 + 2 = a_4$$

$$b_1 + 2d_b + 2 = a_1 + 3d_a$$

$$a_1 + 2(d+1) + 2 = a_1 + 3d$$

$$2d + 4 = 3d$$

$$\boxed{d = 4}$$

$$d = 4 :$$

$$(\Leftrightarrow) \quad b_n = a_n + n - 1$$

$$b_n = a_n + n - 1$$

$$\Leftrightarrow b_1 + d_b(n-1) = a_1 + d_a(n-1) + n - 1$$

$$\Leftrightarrow a_1 + 5(n-1) = a_1 + 4(n-1) + n - 1$$

$$\Leftrightarrow a_1 + 5n - 5 = a_1 + 4n - 4 + n - 1$$

$$\Leftrightarrow a_1 + 5n - 5 = a_1 + 5n - 5 \quad \text{o.k.}$$

$$b_n = a_n + n - 1 :$$

$n$

$$S_n^b - S_n^a = \frac{n \cdot [b_1 + b_n]}{2} - \frac{n \cdot [a_1 + a_n]}{2}$$

$$S_n^b - S_n^a = \frac{n \cdot [b_1 + b_n - (a_1 + a_n)]}{2}$$

$$S_n^b - S_n^a = \frac{n \cdot (a_1 + b_n - a_1 - a_n)}{2} :$$

$$S_n^b - S_n^a = \frac{n \cdot (b_n - a_n)}{2}$$

$$\boxed{S_n^b - S_n^a = \frac{n \cdot (n-1)}{2}}$$

$$S_n^b - S_n^a = \frac{n \cdot [2 \cdot b_1 + 5 \cdot (n-1)]}{2} - \frac{n \cdot [2 \cdot a_1 + 4 \cdot (n-1)]}{2}$$

$$S_n^b - S_n^a = \frac{n \cdot \{ [2 \cdot a_1 + 5 \cdot (n-1)] - [2a_1 + 4 \cdot (n-1)] \}}{2}$$

$$S_n^b - S_n^a = \frac{n \cdot [2a_1 + 5n - 5 - (2a_1 + 4n - 4)]}{2}$$

$$S_n^b - S_n^a = \frac{n \cdot (2a_1 + 5n - 5 - 2a_1 - 4n + 4)}{2}$$

$$\boxed{S_n^b - S_n^a = \frac{n \cdot (n-1)}{2}}$$

$$S_n^b - S_n^a = \frac{n \cdot (n-1)}{2} :$$

"

$$\cdot S_n^b - S_n^a = 780 : \quad \cdot$$

$$\frac{n \cdot (n-1)}{2} = 780$$

$$n^2 - n = 1560$$

$$n^2 - n - 1560 = 0$$

$$\boxed{n = 40} \text{ o.k.}$$

$$n = -39 \text{ false, } n \text{ is natural}$$

$$\cdot S_n^a = 3,040 :$$

$$\frac{40 \cdot [2 \cdot a_1 + 4 \cdot (40-1)]}{2} = 3040$$

$$2a_1 + 156 = 152$$

$$2a_1 = -4$$

$$\boxed{a_1 = -2}$$

$$\cdot a_1 = -2 :$$

SABCD

$( a > 0 ) 4a^2$

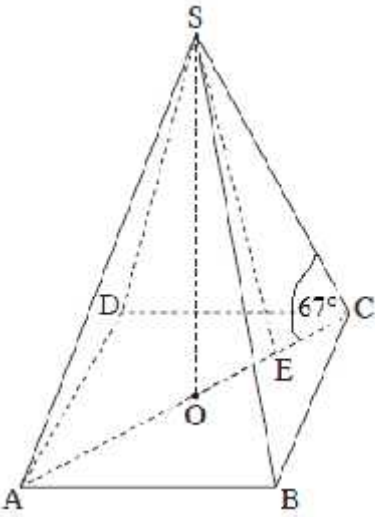
- k

$$4a^2 = \frac{k^2}{2}$$

$$8a^2 = k^2$$

$$\boxed{2a\sqrt{2} = k}$$

$.2a\sqrt{2}$



$\angle SCO = 67^\circ$

ΔSOC

$$\tan \angle SOC = \frac{SO}{OC}$$

$$\tan 67^\circ = \frac{SO}{a\sqrt{2}}$$

$$a\sqrt{2} \tan 67^\circ = SO$$

$$\boxed{SO = 3.332a}$$

$.3.332a$  ,SO , :

. 15 -

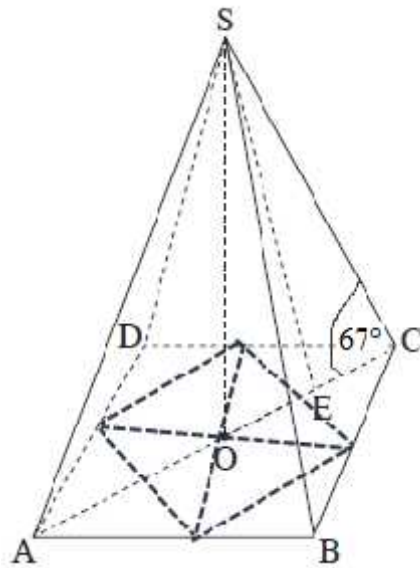
$$. a \quad (1)$$

$$15 = \frac{4a^2 \cdot 3.32a}{3}$$

$$3.377 = a^3$$

$$\boxed{a = 1.5}$$

$$. a = 1.5 :$$



$$. OC \quad E \quad (2)$$

$$AE = \frac{3}{4} AC = \frac{3}{4} \cdot 2a\sqrt{2} = \frac{3}{4} \cdot 2 \cdot 1.5\sqrt{2} = 3.182$$

$$S_{\Delta ASE} = \frac{AE \cdot SO}{2}$$

$$S_{\Delta ASE} = \frac{3.182 \cdot 3.332a}{2}$$

$$S_{\Delta ASE} = \frac{3.182 \cdot 3.332 \cdot 1.5}{2}$$

$$\boxed{S_{\Delta ASE} = 7.95}$$

$$. 7.95 \quad ASE \quad :$$

, S ,

.(ABCD )

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$$. 15 : 2 = 7.5 :$$

(SO , )

. 7.5

:

$$-\frac{2f}{3} \leq x \leq \frac{2f}{3}$$

$$f(x) = 2 - \cos^2 x$$

(y -

$$f(x) = f(-x)$$

$$\left(-\frac{2f}{3}, 1.75\right), \left(\frac{2f}{3}, 1.75\right):$$

( , , )

$$f'(x) = -2 \cos x (-\sin x)$$

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

$$0 = \sin 2x = \sin 0$$

$$2x = 2fk \quad 2x = f + 2fk$$

$$x = fk \quad x = \frac{f}{2} + fk$$

$$k = 0: (0, 1) \quad k = 0: \left(\frac{f}{2}, 2\right)$$

$$k = -1: \left(-\frac{f}{2}, 2\right)$$

( , , )

x	$-\frac{2f}{3}$		$-\frac{f}{2}$		0		$\frac{f}{2}$		$\frac{2f}{3}$
f(x)	1.75		2		1		2		1.75
f'(x)		+		-		+		-	
	Min	↘	Max	↘	Min	↘	Max	↘	Min

$$\left(-\frac{2f}{3}, 1.75\right), \left(-\frac{f}{2}, 2\right), (0, 1), \left(\frac{f}{2}, 2\right), \left(\frac{2f}{3}, 1.75\right):$$

$$1 \quad , \quad -\frac{2f}{3} \leq x \leq \frac{2f}{3}$$

$$x \quad f(x) :$$

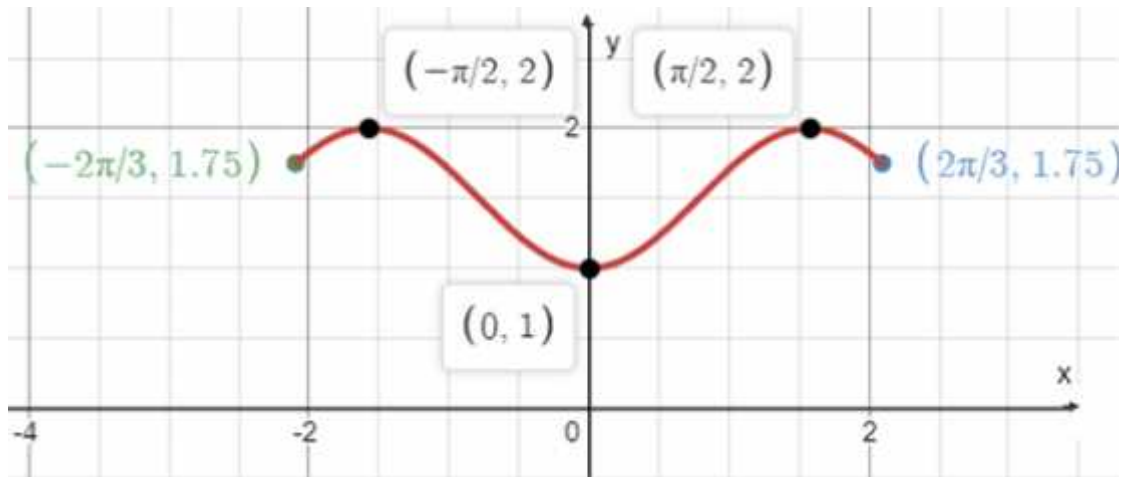
$$f(x) = 2 - \cos^2 x$$

$$f(-x) = 2 - \cos^2(-x)$$

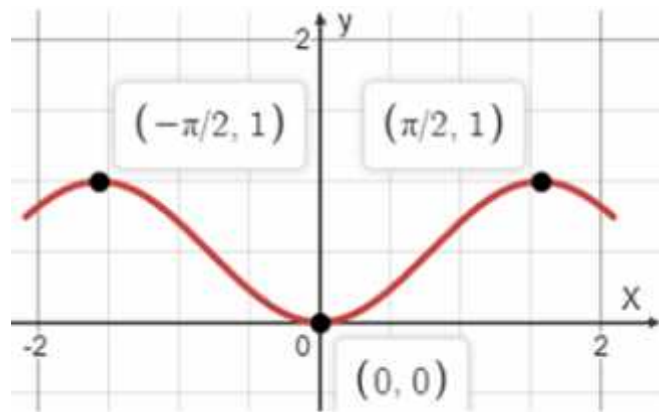
$$f(-x) = 2 - \cos^2 x \quad \leftarrow \cos(-x) = \cos x$$

$$f(-x) = f(x)$$

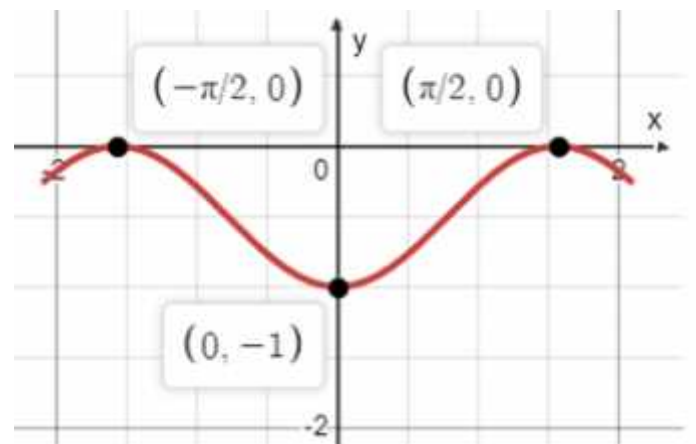
$f(x) = 2 - \cos^2 x$



$c$  ,  $c$   $f(x)$  ,  $g(x) = f(x) + c$  .  
 $x - f(x)$  ,  $c$   
 $(x - )$  ,  $1 f(x)$



$(x - )$  ,  $2 f(x)$



$c = -2$  ,  $c = -1$  :

$$f(x) = e^{2x-1} - 1$$

$$f(0) = e^{2 \cdot 0 - 1} - 1 = \frac{1}{e} - 1 \approx -0.632 \rightarrow \left(0, \frac{1}{e} - 1\right)$$

$$x = 0$$

$$y = 0$$

**(1)**

$$0 = e^{2x-1} - 1$$

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

$$0 = 2x - 1$$

$$x = \frac{1}{2} \rightarrow \left(\frac{1}{2}, 0\right)$$

$$\left(\frac{1}{2}, 0\right), \left(0, \frac{1}{e} - 1\right) :$$

$$f(x)$$

**(2)**

$$f'(x) = 2e^{2x-1}$$

$$e^{2x-1} > 0 \rightarrow f'(x) > 0$$

$$f(x) :$$

$$y = -1 :$$

$$e^{2x-1} = 0$$

**(3)**

$$f(10) = e^{2 \cdot 10 - 1} - 1 = 178,482,300 \rightarrow +\infty$$

$$f(-10) = e^{2 \cdot (-10) - 1} - 1 = -0.99999 \rightarrow -1$$

$$x \rightarrow -\infty, y = -1 :$$

$$f(x) = e^{2-x} - 1$$

$$f(0) = e^{2-0} - 1 = e^2 - 1 \approx 6.389 \rightarrow (0, e^2 - 1)$$

$$x = 0$$

$$y = 0$$

$$0 = e^{2-x} - 1$$

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

$$0 = 2 - x$$

$$x = 2 \rightarrow (2, 0)$$

$$(2, 0), (0, e^2 - 1) :$$

$$g(x) = -e^{2-x}$$

$$g'(x) = -e^{2-x}$$

$$e^{2-x} > 0 \rightarrow g'(x) < 0$$

$$x, g(x) :$$

$$y = -1 :$$

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

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

$$g(10) = e^{2-10} - 1 = -0.9997 \rightarrow -1$$

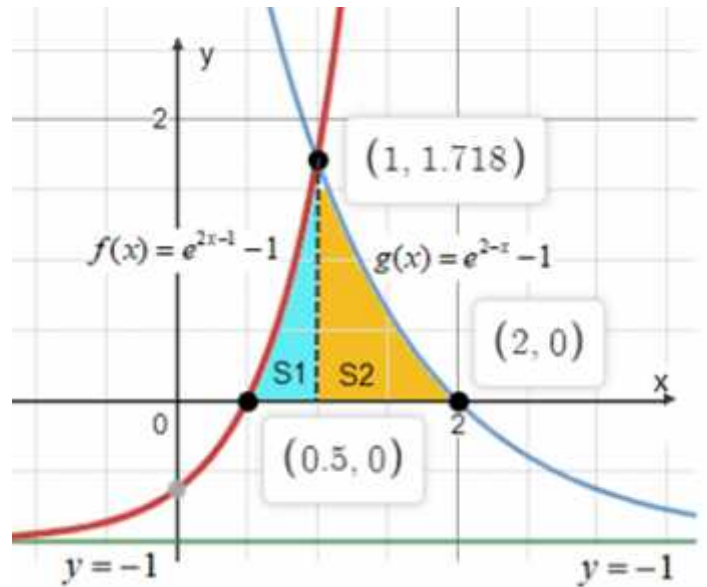
$$g(-10) = e^{2-(-10)} - 1 = 162,753 \rightarrow +\infty$$

$$x \rightarrow +\infty, y = -1 :$$



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.  $g(x) = f(x)$

$$\begin{cases} f(x) = e^{2x-1} - 1 \\ g(x) = e^{2-x} - 1 \end{cases}$$

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

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

$$2x - 1 = 2 - x \rightarrow 3x = 3$$

$$x = 1 \rightarrow y = e^{2-1} - 1 = e - 1 \approx 1.718 \rightarrow \boxed{(1, e-1)}$$

.  $(1, e-1)$  :

$$S_1 = \int_{0.5}^1 (e^{2x-1} - 1) dx$$

$$S_1 = \left( \frac{e^{2x-1}}{2} - x \right) \Big|_{0.5}^1$$

$$\left. \begin{aligned} x=1: \frac{e^{2 \cdot 1 - 1}}{2} - 1 &= \frac{e}{2} - 1 \\ x=0.5: \frac{e^{2 \cdot 0.5 - 1}}{2} - 0.5 &= 0 \end{aligned} \right\} S_1 = \frac{e}{2} - 1$$

$$S_2 = \int_1^2 (e^{2-x} - 1) dx$$

$$S_2 = \left( \frac{e^{2-x}}{-1} - x \right) \Big|_1^2$$

$$\left. \begin{aligned} x=2: -e^{2-2} - 2 &= -3 \\ x=1: -e^{2-1} - 1 &= -e - 1 \end{aligned} \right\} S_2 = e - 2$$

.  $S_1 + S_2 = S_1 = \frac{e}{2} - 1 + e - 2 = 1.5e - 3 \approx 1.077$  :

. "  $1.5e - 3 \approx 1.077$

:

$a > 0$  ,  $f(x) = \frac{1 + \ln x}{ax}$

$x > 0$  :

$y = 0$   $x -$

$$0 = \frac{1 + \ln x}{ax}$$

$$1 + \ln x = 0$$

$$\ln x = -1$$

$$x = e^{-1} = \frac{1}{e} \approx 0.368 \rightarrow \left(\frac{1}{e}, 0\right)$$

$x > 0$

,  $y -$

$\left(\frac{1}{e}, 0\right) :$

,  $f(x)$

$x -$

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

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

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

$$0 = \ln x$$

$$x = 1$$

$$\left. \begin{aligned} f'(0.5) &= (-) \cdot \frac{(-)}{(+)} > 0 \\ f'(2) &= (-) \cdot \frac{(+)}{(+)} < 0 \end{aligned} \right\} \text{max}$$

$x = 1 :$

$0 < x < 1$  ,  $x > 1 :$

$$\cdot (1, \frac{1}{4})$$

$$, \frac{1}{4}$$

y -

$$\cdot f(x) = \frac{1 + \ln x}{ax} \quad (1)$$

$$\frac{1}{4} = \frac{1 + \ln 1}{a \cdot 1}$$

$$\frac{1}{4} = \frac{1}{a}$$

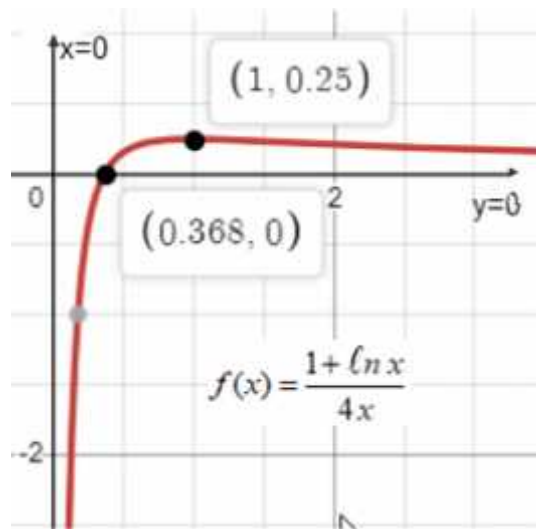
$$\boxed{a = 4}$$

$$\cdot a = 4:$$

$$\cdot f(x) = \frac{1 + \ln x}{4x} \quad (2)$$

$$y = 0, f(100) = 0.014 \rightarrow +0, x \rightarrow +\infty$$

$$x = 0, f(0.001) = -1,476 \rightarrow -\infty, x \rightarrow 0$$



. x -

$$, f(x)$$

$$, g(x) = -f(x)$$

. g(x)

$$(1, -\frac{1}{4}) - , f(x)$$

$$(1, \frac{1}{4})$$

$$, g'(x) = -f'(x) -$$

$$, x = 1$$

$$, (1, -\frac{1}{4}) :$$