

$3x$ (") $x -$.
 .(") B A $s -$
 :

$s -$ "	$v -$ "	$t -$	
14	x	$\frac{14}{x}$	C - " 14 - C
14	$3x$	$\frac{14}{3x}$	C - " 14 - C
$6x$	$3x$	2	C - A -
$s - 6x$	x	$\frac{s - 6x}{x}$	B - C -
s	$3x$	$\frac{s}{3x}$	B - A -

" 14 ,
-

· $\frac{1}{3}$, 20

$$\frac{14}{x} = \frac{14}{3x} + \frac{1}{3} : , ,$$

$\frac{2}{3}$, 40 -

$$\frac{2}{3} + \frac{s}{3x} = 2 + \frac{s - 6x}{x} : , ,$$

:

$$\begin{cases} \frac{14}{x} = \frac{14}{3x} + \frac{1}{3} \\ \frac{2}{3} + \frac{s}{3x} = 2 + \frac{s-6x}{x} \end{cases}$$

1. $\frac{14}{x} = \frac{14}{3x} + \frac{1}{3}$

$$\frac{28}{3x} = \frac{1}{3}$$

$$\boxed{x=28}$$

2. $\frac{1}{3} + \frac{s}{3 \cdot 28} = 2 + \frac{14}{3 \cdot 28} + \frac{s}{28} - 6 - \frac{14}{28}$

$$-\frac{s}{42} = -\frac{14}{3}$$

$$\boxed{s=196}$$

" 196 B A :

" 84 :

$$\frac{1}{4+2} + \frac{1}{4+3} + \frac{1}{2 \cdot 4} = 0.43 > 0.4 : \quad n=4 \quad .1 .$$

$n=4$,

,() $n=k \geq 4$.2

$$\frac{1}{k+2} + \frac{1}{k+3} + \dots + \frac{1}{2k} > 0.4 :$$

" , $n=k+1$.3

$$\frac{1}{k+3} + \frac{1}{k+4} + \dots + \frac{1}{2k} + \frac{1}{2k+1} + \frac{1}{2k+2} > 0.4$$

$$\frac{1}{k+2} + \frac{1}{k+3} + \frac{1}{k+4} + \dots + \frac{1}{2k} + \frac{1}{2k+1} + \frac{1}{2k+2} - \frac{1}{k+2} > 0.4$$

↓

$$\Leftrightarrow 0.4 + \frac{1}{2k+1} + \frac{1}{2k+2} - \frac{1}{k+2} > 0.4$$

, , - , () - ,

$$\Leftrightarrow 0.4 + \frac{1}{2k+1} + \frac{1}{2k+2} - \frac{1}{k+2} \geq 0.4$$

$$\Leftrightarrow 0.4 + \frac{(2k+2)(k+2) + (2k+1)(k+2) - (2k+1)(2k+2)}{(2k+1)(2k+2)(k+2)} \geq 0.4$$

$$\Leftrightarrow 0.4 + \frac{2k^2 + 6k + 4 + 2k^2 + 5k + 2 - 4k^2 - 6k - 2}{(2k+1)(2k+2)(k+2)} \geq 0.4$$

$$\Leftrightarrow 0.4 + \frac{5k+4}{(2k+1)(2k+2)(k+2)} \geq 0.4$$

$$k \geq 4 \quad k > -0.8 \quad , \quad ,$$

. k

$$k \geq 4$$

$n=4$.4

$$n=k \geq 4$$

$$n=k+1$$

$n \geq 4$, n , - ,

"

$$\frac{1}{100} + \frac{1}{101} + \dots + \frac{1}{198} > 0.41 \quad .$$

:

$$, n = 98 \geq 4 \quad ,$$

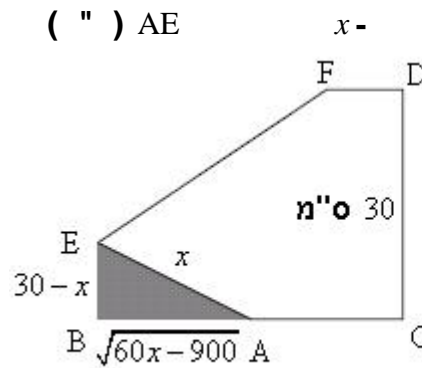
$$, \frac{1}{98+2} + \frac{1}{98+3} + \dots + \frac{1}{2 \cdot 98} > 0.4$$

$$\frac{1}{100} + \frac{1}{101} + \dots + \frac{1}{196} > 0.4 :$$

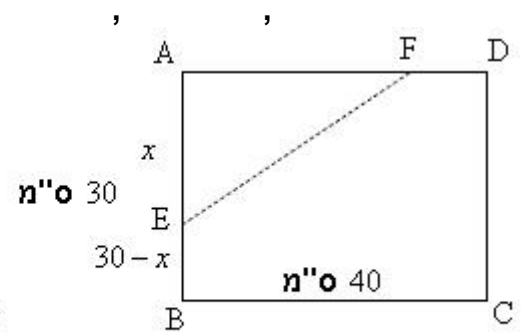
$$\frac{1}{197} + \frac{1}{198} = 0.01013 :$$

$$\frac{1}{100} + \frac{1}{101} + \dots + \frac{1}{198} > 0.41013 :$$

!



ציור ב



ציור א

מקסימום שטח המשושה ABE

BE = 30 - x : , " 30

AE = x , AE

AB = $\sqrt{x^2 - (30-x)^2} = \sqrt{60x-900}$, , ABE

:

$$S = \frac{(30-x)\sqrt{60x-900}}{2}$$

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$$s'(x) = \frac{1}{2} \cdot (-\sqrt{60x-900} + \frac{30 \cdot 60(30-x)}{\sqrt{60x-900}})$$

$$s'(x) = \frac{1}{2} \cdot \frac{-60x+900+900-30x}{\sqrt{60x-900}}$$

$$s'(x) = \frac{900-45x}{\sqrt{60x-900}}$$

$$\frac{900-45x}{\sqrt{60x-900}} = 0 \quad / \cdot \sqrt{60x-900}$$

$$900-45x = 0$$

$$-45x = -900$$

$$x = 20$$

()

$$y'(10) = 900 - 45 \cdot 10 = 450 > 0$$

$$y'(20) = 900 - 45 \cdot 25 = -225 < 0$$

0		20		30	x
	+	0	-		y'
	↗	Max	↘		

$$AB = \sqrt{300}, BE = 10, AE = 20 :$$

$$S = \frac{10\sqrt{300}}{2} = 86.6 :$$

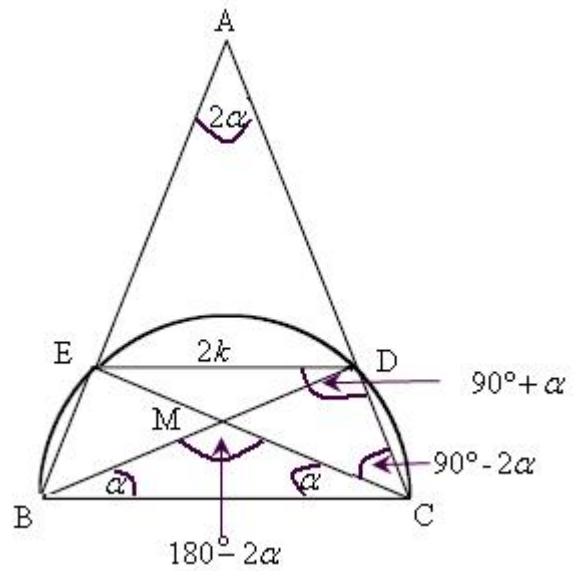
$$86.6 :$$

$$AD = BC = 40 :$$

BC

A

:



EDCB

EC:

ABC

EDCB

$\angle CEB = 90^\circ$

BC

$\angle ABC = \angle ACB = \frac{180^\circ - 2r}{2} = 90^\circ - r$

$\angle BCE = r$

$\angle DCE = 90^\circ - 2r$

$\angle CDE = 90^\circ + r$

$\frac{k_1 k_2 \sin x}{2}$

EDCB

$\angle EMD = 180^\circ - 2r$

$$\frac{\text{EC}}{\sin \angle CDE} = \frac{\text{ED}}{\sin \angle DCE}$$

$$\frac{\text{EC}}{\sin (90^\circ + r)} = \frac{2k}{\sin (90^\circ - 2r)}$$

$$\boxed{\text{EC} = \frac{2k \cos r}{\cos 2r}} \quad \leftarrow \sin(90^\circ - x) = \cos x, \sin(90^\circ + x) = \cos x$$

:

$$S = 0.5 \cdot \left(\frac{2k \cos r}{\cos 2r} \right)^2 \sin(180^\circ - 2r)$$

$$S = 0.5 \cdot \frac{4k^2 \cos^2 r}{\cos^2 2r} \sin 2r$$

$$\boxed{S = \frac{2k^2 \cos^2 r \sin 2r}{\cos^2 2r}}$$

$$\frac{2k^2 \cos^2 r \sin 2r}{\cos^2 2r} :$$

$$y = 2x^2 - x$$

$$y = 6$$

$$2x^2 - x = 6$$

$$2x^2 - x - 6 = 0$$

$$x_{1,2} = \frac{1 \pm 7}{4}$$

$$\boxed{x_1 = -1.5} \quad x_2 = 2$$

$$(-1.5, 6)$$

:

$$y' = 4x - 1$$

$$m = 4 \cdot (-1.5) - 1 = -7$$

:

$$y - 6 = -7(x - 1.5)$$

$$\boxed{y = -7x - 4.5}$$

$$y = -7x - 4.5 :$$

$$S = \int_{-1.5}^0 (2x^2 - x - (-7x - 4.5)) dx =$$

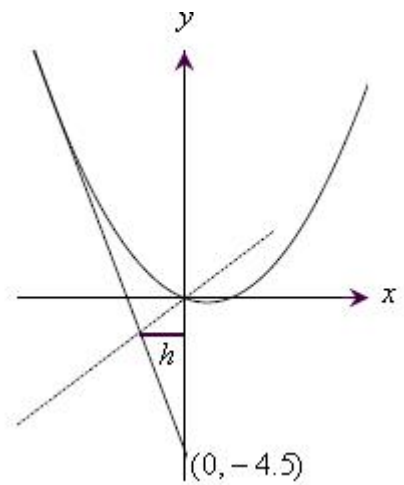
$$S = \int_{-1.5}^0 (2x^2 + 6x + 4.5) dx =$$

$$S = \left(\frac{2x^3}{3} + 3x^2 + 4.5x \right) \Big|_{-1.5}^0$$

$$S = (0) - \left(\frac{2 \cdot (-1.5)^3}{3} + 3 \cdot (-1.5)^2 + 4.5 \cdot (-1.5) \right)$$

$$S = (0) - (-2.25)$$

$$\boxed{S = 2.25}$$



, $x = a$

($y -$,)

$$2.25 : 2 = 1.125 :$$

, (0, -4.5) $y -$

: h $y -$,

$$1.125 = \frac{4.5h}{2}$$

$$h = 0.5$$

$a = -0.5 :$, $x -$

$a = -0.5 :$