

. $y = \dots$, (") ' $x = \dots$:
 . ' 25% - , (") ' $\frac{100+25}{100} \cdot x = 1.25x$
 . ' , ' $y - 0.5 = \dots$
 (t) (v) (s) - $s = vt$

" s	" v	t	
xy	x	y	
1.25x(y-0.5)	1.25x	y-0.5	

,
 $xy = 1.25x(y - 0.5) :$,

$xy = 1.25x(y - 0.5) \quad /: x \quad (x > 0)$

$y = 1.25(y - 0.5)$

$y = 1.25y - 0.625$

$-0.25y = -0.625$

$y = 2.5$

. A ' 2.5 :

$y = 4x - 14$ BK

$B(0, -14)$, $x = 0$ y - , B

$y_A = -14 + 17 = 3$: 17 , y - , AB

$A(0, 3)$:

$34 = \frac{AB \cdot h}{2} \rightarrow 68 = 17h \rightarrow h = 4$, 34 AKB

$x_K = 4$ 4 K AB - ,

$y = 4 \cdot 4 - 14 = 2$ BK 4

$K(4, 2)$:

$m_{AK} = \frac{2-3}{4-0} = -\frac{1}{4}$: AK (1)

$m_{AK} \cdot m_{AK} = -\frac{1}{4} \cdot 4 = -1$

AKB

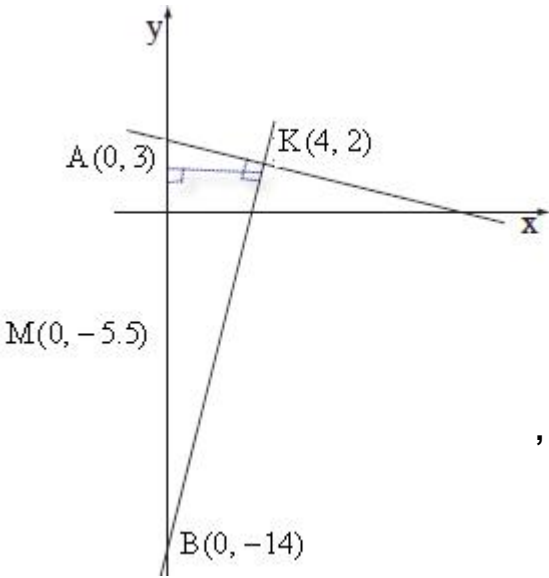
AB -

:

$M(0, -5.5)$, $y_M = \frac{3 + (-14)}{2} = -5.5$: y - (2)

$\frac{17}{2} = 8.5$:

$x^2 + (y + 5.5)^2 = 72.25$:



$$\frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

$$P(4 \cup 6) = \frac{1}{6} + \frac{1}{6} = \frac{1}{3},$$

$$\left(\frac{1}{3}\right)^2 = \frac{1}{9}$$

$$\frac{1}{9}$$

$$, 6 \cdot 4$$

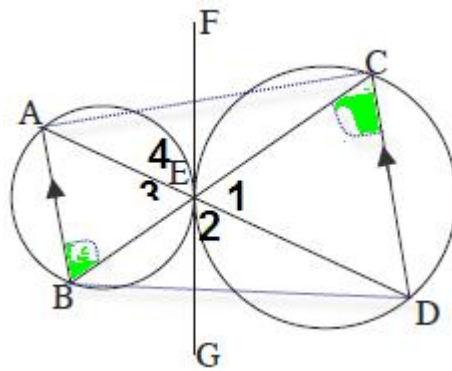
$$1 - \left(\frac{2}{3}\right)^2 = \frac{5}{9}$$

$$\frac{5}{9}$$

$$k = 3, n = 6, p = \frac{5}{9}$$

$$P_6(3) = \binom{6}{3} \left(\frac{5}{9}\right)^3 \left(1 - \frac{5}{9}\right)^{6-3} = \frac{6!}{3!(6-3)!} \cdot \left(\frac{5}{9}\right)^3 \cdot \left(\frac{4}{9}\right)^3 = 20 \cdot \left(\frac{5}{9}\right)^3 \cdot \left(\frac{4}{9}\right)^3 = 0.301$$

$$. 0.301$$



FG .1

FG .2

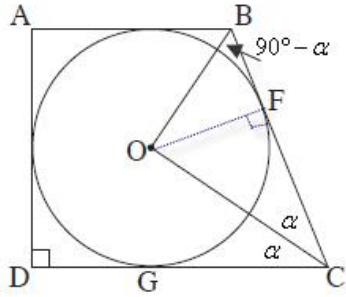
: "

$$\sphericalangle ABE = \sphericalangle GED .$$

$$\frac{AE}{DE} = \frac{BE}{CE} .$$

$$h_{CD(\triangle ACD)} = h_{CD(\triangle BCD)} .$$

	FG	3	1
	$\sphericalangle E_4 = \sphericalangle ABE$	4	3
	$\sphericalangle GED = \sphericalangle E_4$	5	
	$\sphericalangle ABE = \sphericalangle GED$	6	5,4
. . .			
	FG	7	2
	$\sphericalangle ECD = \sphericalangle GED$	8	7
	$\sphericalangle ABE = \sphericalangle ECD$	9	8,6
	$AB \parallel CD$	10	9
2	$\frac{AE}{DE} = \frac{BE}{CE}$	11	10
. . .			
	$h_{CD(\triangle ACD)} = h_{CD(\triangle BCD)}$	12	10
. . .			



($\sphericalangle ADC = 90^\circ$)

ABCD .1

.O

ABCD .2

.G

DC .3

.F

BC .4

.R

.6 $\frac{OC}{OB} = 2$.5 : '

$\sphericalangle BOC = 90^\circ$ (2) $\sphericalangle BCD$

OC (1) . : "

. OC (2)

(1) .

	.G	DC	7	3
	F	BC	8	4
(C)	, (CF, CG)	$\sphericalangle BCD$	OC	9
				8,7
(1) . .				
		$\sphericalangle FCO = \sphericalangle OCG = r$	10	9
		$\sphericalangle BCD = 2r$	11	10
		ABCD ($\sphericalangle ADC = 90^\circ$)	12	1
		AB DC	13	12
$180^\circ -$		$\sphericalangle ABC = 180^\circ - 2r$	14	13,11
	O	ABCD	15	2
(B)	, (BA, BC)	$\sphericalangle ABC$	BO	16
				15
		$\sphericalangle OBF = 90^\circ - r$	17	16,14
180°	$\triangle BOC$	$\sphericalangle BOC = 90^\circ$	18	17,10
(2) . . .				

(1)

$\triangle OBC$

$$\tan r = \frac{OB}{OC}$$

$$\tan r = \frac{1}{2}$$

$$r = 26.565$$

$$\sphericalangle C = 53.13^\circ$$

$$\sphericalangle B = 126.87^\circ$$

$90^\circ, 90^\circ, 126.87^\circ, 53.13^\circ, \quad :$

R OC (2)

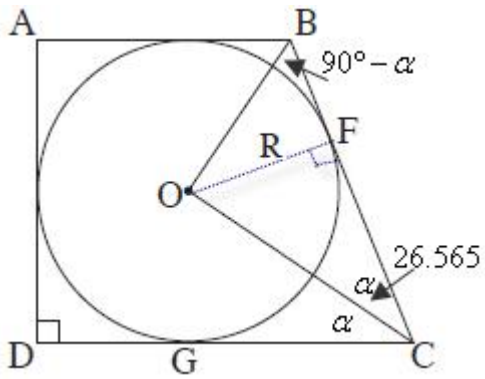
$\triangle OFC$

$$\sin 26.565 = \frac{R}{OC}$$

$$OC = \frac{R}{\sin 26.565}$$

$$\boxed{OC = 2.236R}$$

$$OC = 2.236R :$$



ΔABC

$$(BC)^2 = (AC)^2 + (AB)^2 - 2AC \cdot AB \cdot \cos \sphericalangle CAB$$

$$(BC)^2 = 8^2 + 5^2 - 2 \cdot 8 \cdot 5 \cdot \cos 40^\circ$$

$$(BC)^2 = 27.72$$

$$BC = \text{" } 5.265$$

ΔABC

$$\frac{AC}{\sin \sphericalangle CBA} = \frac{BC}{\sin \sphericalangle CAB}$$

$$\frac{5}{\sin \sphericalangle CBA} = \frac{5.265}{\sin 40^\circ}$$

$$\frac{5 \sin 40^\circ}{5.265} = \sin \sphericalangle CBA$$

$$\boxed{\sphericalangle CBA = 37.62^\circ} \quad \cancel{\sphericalangle CBA = 142.38^\circ}$$

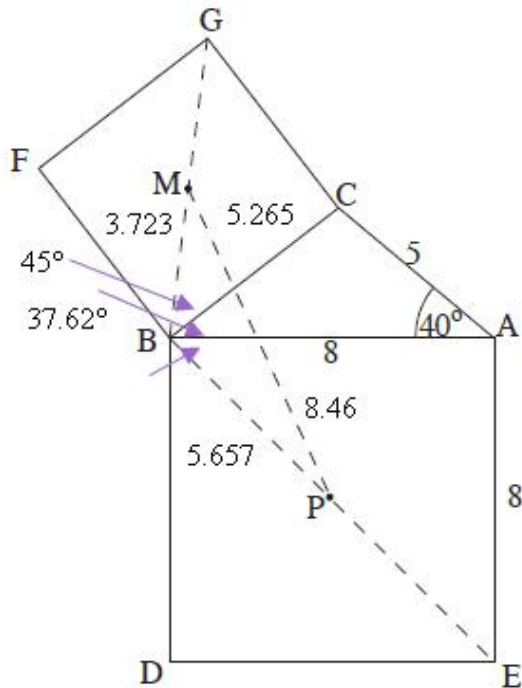
(180° ΔABC -

) $\sphericalangle CBA = 37.62^\circ$:

$$\sphericalangle GBC = \sphericalangle ABE = 45^\circ$$

$$\sphericalangle MBP = 45^\circ + 37.62^\circ + 45^\circ = 127.62^\circ$$

$$\sphericalangle MBP = 127.62^\circ$$



MB .

$$MB = 0.5 \cdot \sqrt{5.265^2 + 5.265^2} = \text{" } 3.723$$

PB

$$PB = 0.5 \cdot \sqrt{8^2 + 8^2} = \text{" } 5.657$$

ΔBMP

$$(MP)^2 = (MB)^2 + (PB)^2 - 2MB \cdot PB \cdot \cos \sphericalangle MBP$$

$$(MP)^2 = 3.723^2 + 5.657^2 - 2 \cdot 3.723 \cdot 5.657 \cdot \cos 127.62^\circ$$

$$MP = \text{" } 8.46$$

$$MP = \text{" } 8.46, \quad PB = \text{" } 5.657, \quad MB = \text{" } 3.723 :$$

"

$$f(x) = \frac{x+5}{x^2-4} + b \quad (a \neq 0)$$

$$x = \pm 2, \quad x \neq \pm 2$$

$$2^2 - a = 0 \rightarrow a = 4$$

$$b = 2$$

(2)

(1)

$$f(x) = \frac{x+5}{x^2-4} + 2 \quad (b=2)$$

$$b = 2, \quad a = 4:$$

$$f(x) = \frac{x+5}{x^2-4} + 2$$

$$y = 0 \quad (1)$$

$$0 = \frac{x+5}{x^2-4} + 2$$

$$0 = x+5 + 2(x^2-4)$$

$$0 = x+5 + 2x^2 - 8$$

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

$$x_{1,2} = \frac{-1 \pm 5}{4} \rightarrow x = 1, \quad x = -1.5$$

$$f(0) = \frac{0+5}{0^2-4} + 2 = 0.75 \quad (x=0)$$

$$(0, 0.75), (1, 0), (-1.5, 0):$$

$$f'(x) = \frac{x^2-4-2x(x+5)}{(x^2-4)^2}$$

$$f'(x) = \frac{x^2-4-2x^2-10x}{(x^2-4)^2}$$

$$f'(x) = \frac{-x^2-10x-4}{(x^2-4)^2}$$

$$0 = -x^2 - 10x - 4$$

$$x_{1,2} = \frac{10 \pm \sqrt{84}}{-2}$$

$$x_1 = -9.58 \rightarrow f(-9.58) = \frac{-9.58 + 5}{(-9.58)^2 - 4} + 2 = 1.95 \rightarrow (-9.58, 1.95)$$

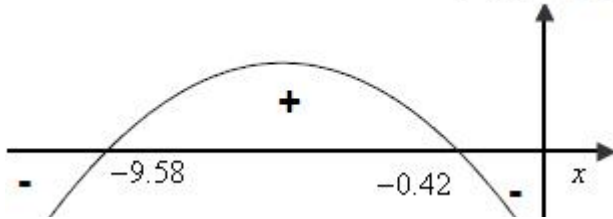
$$x_2 = -0.42 \rightarrow f(-0.42) = \frac{-0.42 + 5}{(-0.42)^2 - 4} + 2 = 0.80 \rightarrow (-0.42, 0.80)$$

, $f'(x)$, ()

. ()

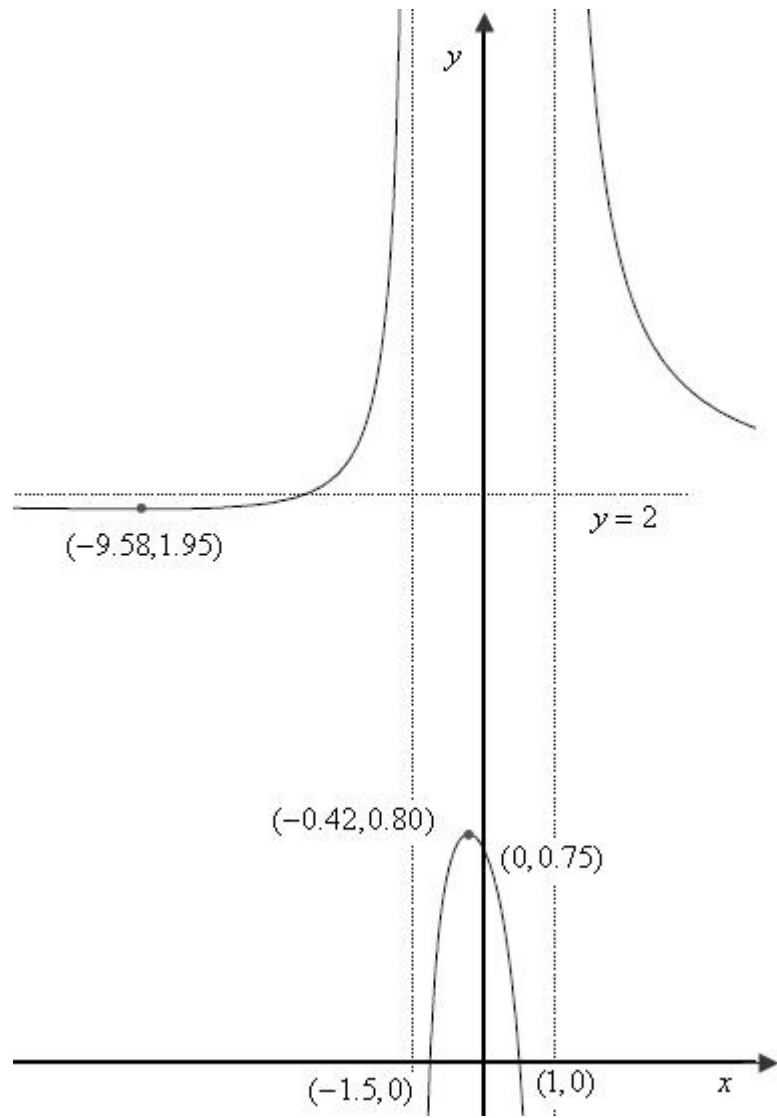
	-9.58		-2		-0.42		2		x
-		+		+		-		-	$f'(x)$
↘	Min	↗		↘	Max	↘		↘	

$f'(x)$ סימני



. (-0.42, 0.80) , (-9.58, 1.95) :

(3)



$$f(x) = \frac{x+5}{x^2-4} + 2$$

$$g(x) = \frac{x+5}{x^2-4}$$

$$f(x) = \frac{x+5}{x^2-4} + 2$$

$$g(x) = \frac{x+5}{x^2-4}$$

2 -

y ,

x :

(-0.42, -1.20) ,

(-9.58, -0.05)

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$0 < a < 1$,

$0 \leq x \leq 2f$

$f(x) = 1 + a \sin x$

k	$x = \frac{f}{2} + 2fk$	$x = -\frac{f}{2} + 2fk$
0	$\frac{f}{2}$	-
1	-	$\frac{3f}{2}$

$f(\frac{f}{2}) = 1 + a \sin(\frac{f}{2}) = 1 + a \rightarrow (\frac{f}{2}, 1 + a)$

$f(\frac{3f}{2}) = 1 + a \sin(\frac{3f}{2}) = 1 - a \rightarrow (\frac{3f}{2}, 1 - a)$

$f(0) = 1 + a \sin(0) = 1 \rightarrow (0, 1)$

$f(2f) = 1 + a \sin(2f) = 1 \rightarrow (2f, 1)$

$f'(x) = a \cos x$

$0 = a \cos x$

$\cos x = 0 = \cos \frac{f}{2}$

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

x	0		$\frac{f}{2}$		$\frac{3f}{2}$		$2f$
y	1		$1 + a$		$1 - a$		1
y'							0
	Min	↗	Max	↘	Min	↗	Max

$1 - a < 1$

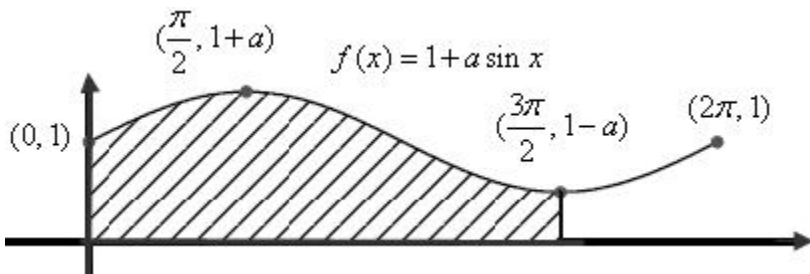
$1 + a > 1$

$0 < a < 1$

$(\frac{f}{2}, 1 + a)$,

$(\frac{3f}{2}, 1 - a)$:

$\frac{7f}{4}$



$\frac{7f}{4} = \int_{\frac{f}{3}}^{\frac{3f}{2}} (1 + a \sin x - 0) dx$

$\frac{7f}{4} = x - a \cos x \Big|_0^{\frac{3f}{2}}$

$\frac{7f}{4} = (\frac{3f}{2} - a \cos(\frac{3f}{2})) - (0 - a \cos(0))$

$\frac{7f}{4} = \frac{3f}{2} + a$

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

$a = \frac{f}{4}$:

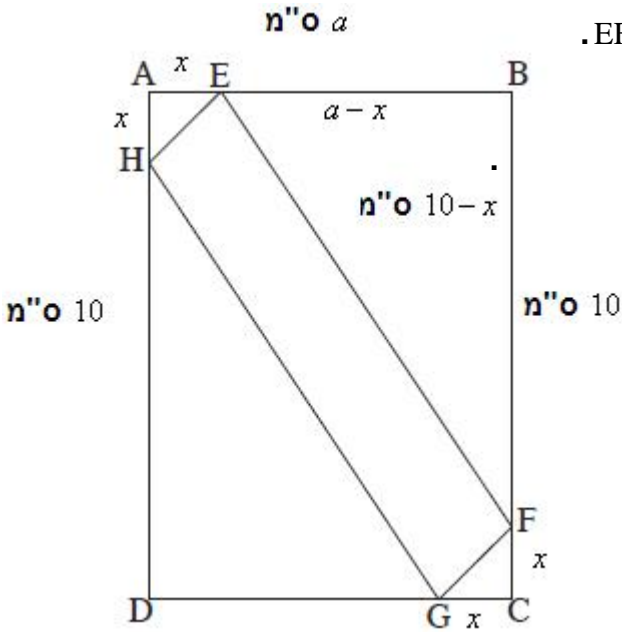
ABCD , AE = AH = CF = CG = x (1) .

.BE = " a-x AB = " a .BF = " 10-x BC = AD = " 10

:ΔAEH - ΔBEF ,

$$\frac{x \cdot x}{2} + \frac{(a-x) \cdot (10-x)}{2} = \frac{x^2 + 10a - ax - 10x + x^2}{2} = \frac{2x^2 - ax - 10x + 10a}{2}$$

. $\frac{2x^2 - ax - 10x + 10a}{2}$ ΔAEH - ΔBEF :



.EFGH שטח המרובע מקסימום (2)

(...) ΔBEF ≅ ΔDGH, ΔAEH ≅ ΔCGF

EFGH

$$S(x) = 10a - \cancel{2} \cdot \frac{2x^2 - ax - 10x + 10a}{\cancel{2}} =$$

$$S(x) = 10a - 2x^2 + ax + 10x$$

$$S(x) = -2x^2 + ax + 10x - 10a$$

$$S'(x) = -4x + a + 10$$

$$0 = -4x + a + 10$$

$$4x = a + 10$$

$$x = 0.25a + 2.5$$

EFGH

x = 0.25a + 2.5 :

EFGH

x = 10 - 6 = 4

, DH = 6

4 = 0.25a + 2.5 :

1.5 = 0.25a

$$a = 6$$

a = 6 :