

. (") x -

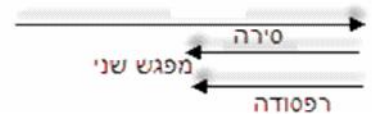
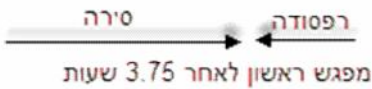
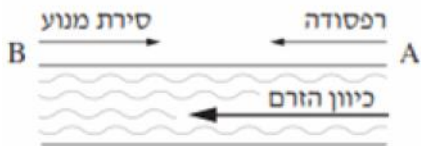
, x , ,

.4x

.4x - x = 3x

,4x + x = 5x

s - " -	v - "	t -		
11.25x	3x	3.75		
3.75x	x	3.75		
15x	3x	5	A - B -	B
15x	5x	3	B - A -	
8x	x	8		



.5 · 5 = " 25

A

,A B

5

() t -

.5x = " 25 , ,

.t = 1.25 , 5t + 25 = 25t ,

.5 + 1.25 = 6.25

A

A

:

. () 6.25

"

,15x

.B " 35

, 8x + 35 = 15x ,

.x = 5

, () " 5 :

. " 20

$$S_n = k - \frac{1}{3^{n+1}} \quad ; \quad a_n \quad .$$

$$a_n = S_n - S_{n-1} \quad ; \quad a_n \quad n > 1$$

$$a_n = S_n - S_{n-1}$$

$$a_n = S_n = k - \frac{1}{3^{n+1}} - \left(k - \frac{1}{3^{n-1+1}}\right)$$

$$a_n = S_n = k - \frac{1}{3^{n+1}} - k + \frac{1}{3^n}$$

$$a_n = \frac{-1+3}{3^{n+1}}$$

$$\boxed{a_n = \frac{2}{3^{n+1}}}$$

$$a_n = \frac{2}{3^{n+1}} \quad ; \quad n > 1$$

$$a_n = \frac{2}{3^{n+1}} \quad ; \quad n > 1$$

$$n = 1$$

$$a_1 = \frac{2}{3^{1+1}} = \frac{2}{9} \quad ; \quad n = 1$$

$$a_1 = S_1 = k - \frac{1}{3^{1+1}} = k - \frac{1}{9}$$

$$k = \frac{1}{3} \quad ; \quad k - \frac{1}{9} = \frac{2}{9}$$

$$(n) a_n = \frac{2}{3^{n+1}}$$

$$\frac{a_{n+1}}{a_n} = \frac{\frac{2}{3^{n+1+1}}}{\frac{2}{3^{n+1}}} = \frac{2}{3^{n+2}} \cdot \frac{3^{n+1}}{2} = \frac{1}{3}$$

$$q = \frac{1}{3} \quad ; \quad (n -)$$

$$q = \frac{1}{3} \quad ; \quad k = \frac{1}{3}$$

$$T = a_2^2 + a_5^2 + a_8^2 + \dots$$

$$T_n$$

$$\frac{a_{n+3}^2}{a_n^2} = \frac{(a_n q^3)^2}{a_n^2} = \frac{a_n^2 q^6}{a_n^2} = q^6 = \left(\frac{1}{3}\right)^6 = \frac{1}{729}$$

),(n -)

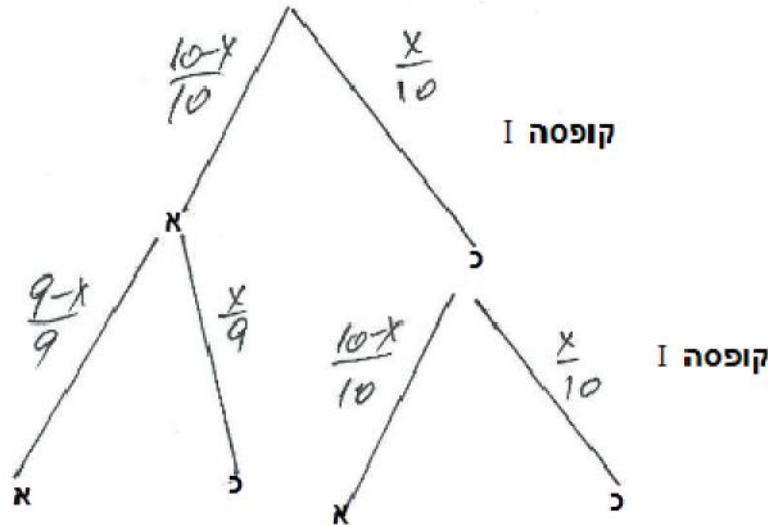
$$1 - -1$$

$$, q^* = \frac{1}{729}$$

$$T = \frac{a_2^2}{1 - q^*} = \frac{\left(\frac{2}{27}\right)^2}{1 - \frac{1}{729}} = \frac{1}{182}$$

$$T = \frac{1}{182} :$$

, $10-x$ - , x I .
 .II ,



$\frac{19}{36}$ II

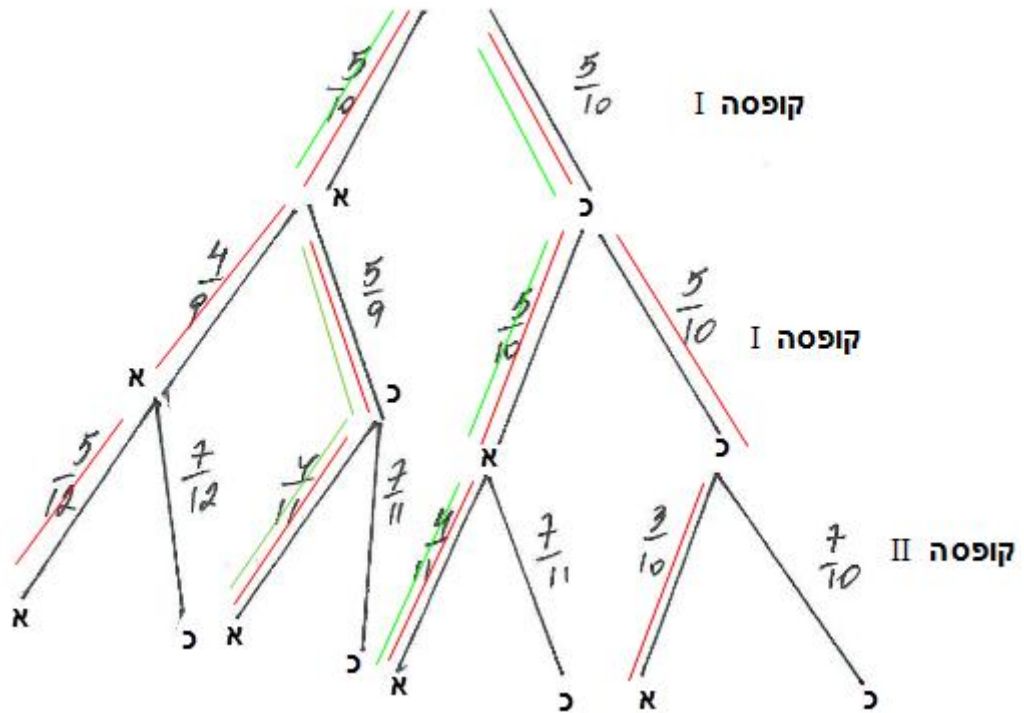
I

$$\begin{aligned} \frac{19}{36} &= \frac{x}{10} \cdot \frac{10-x}{10} + \frac{10-x}{10} \cdot \frac{x}{9} \\ \frac{19}{36} &= \frac{x(10-x)}{100} + \frac{x(10-x)}{90} \\ \frac{19}{36} &= \frac{19x(10-x)}{900} \\ 25 &= x(10-x) \\ x^2 - 10x + 25 &= 0 \\ \boxed{x=5} \end{aligned}$$

I

:

5 - 5 I ,
 3 - 7 II
 ,II ,I ,



() II

$$P(\text{red from box II}) = \frac{5}{10} \cdot \frac{5}{10} \cdot \frac{3}{10} + \frac{5}{10} \cdot \frac{5}{10} \cdot \frac{4}{11} + \frac{5}{10} \cdot \frac{5}{9} \cdot \frac{4}{11} + \frac{5}{10} \cdot \frac{4}{9} \cdot \frac{5}{12}$$

$$P(\text{red from box II}) = \frac{4271}{11880} \approx 0.3595$$

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II

:

II

(,)

$$P(3 \text{ red after} / \text{red from box II}) = \frac{P(3 \text{ red after} \cap \text{red from box II})}{P(\text{red from box II})} =$$

$$P(3 \text{ red after} / \text{red from box II}) = \frac{\frac{5}{10} \cdot \frac{5}{10} \cdot \frac{4}{11} + \frac{5}{10} \cdot \frac{5}{9} \cdot \frac{4}{11}}{\frac{4271}{11880}} =$$

$$P(3 \text{ red after} / \text{red from box II}) = \frac{2280}{4271} \approx 0.5338$$

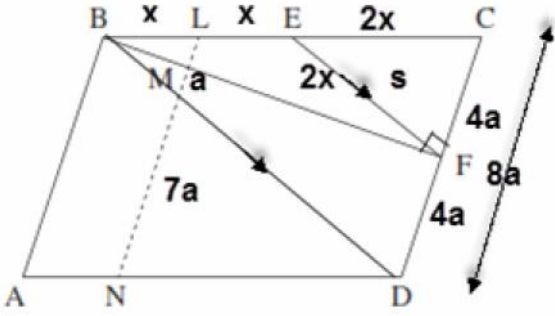
II

:

$$\frac{2280}{4271} \approx 0.5338$$

35806/35581

17



.CF = FD .4 BE = EC .3 $\sphericalangle A < 90^\circ$.2 .

ABCD .1

$S_{\triangle ECF} = s$.5

BE = EF .7 : .LN || AB .6 .BL = LE .6 :

. ABFD . $\frac{LM}{MN}$. S_{ABCD} . : "

	CF = FD	8	4
	$S_{\triangle ECF} = s$	9	5
$\triangle BCF$	EF	$S_{\triangle BCF} = 2s$	10 9,8
ABCD	BF	$S_{ABCD} = 4s$	11 10,8
	ABCD	12	1
() BD	$S_{ABCD} = 8s$	13	12,11
...			
	BE = EC = 2x	14	3
	BL = LE = x	15	14,6
	$\frac{BL}{BC} = \frac{1}{4}$	16	15,14
	LN AB	17	6
	DC AB	18	12
,	LN DC	19	18,17
1	$\frac{LM}{CF} = \frac{BL}{BC} = \frac{1}{4}$	20	19,16
	$\frac{LM}{CD} = \frac{1}{8}$	21	20,8
	BC AD	22	12
	LCDN	23	22,18
	LN = CD	24	23
	$\frac{LM}{LN} = \frac{1}{8}$	25	24,21
	$\frac{LM}{MN} = \frac{1}{7}$	26	25
...			

	$BE = EF$	27	7
	$BE = EF = EC$	28	27, 14
	$\sphericalangle CFB = 90^\circ$	29	28
$180^\circ -$	$\sphericalangle DFB = 90^\circ$	30	29
	$\sphericalangle A < 90^\circ$	31	2
$180^\circ -$	ABFD	32	31, 30
. . .			

ABCD .

() AECB , AE || BC

, 60°)

.(, <AED = <BCD = 60°

. BC = AD = b - a - DE = b - a , , CE = AB = a

. BC = AD = b - a :

ΔABD .

$$\angle BAD = 180^\circ - 60^\circ = 120^\circ$$

$$(BD)^2 = (AD)^2 + (AB)^2 - 2AD \cdot AB \cdot \cos \angle BAD$$

$$(4\sqrt{7})^2 = 16^2 + (b-4)^2 - 2 \cdot 4 \cdot (b-4) \cdot \cos 120^\circ$$

$$112 = 16 + (b-4)^2 + 4(b-4)$$

$$(b-4)^2 + 4(b-4) - 96 = 0$$

$$b-4 = 8 \rightarrow \boxed{b=12}$$

$$b-4 = -12 \rightarrow \cancel{b=-8}$$

. b = 12 :

(1).

. ΔABD ,

ΔABD

$$\frac{BD}{\sin 120^\circ} = 2R$$

$$\frac{4\sqrt{7}}{2 \sin 120^\circ} = R$$

$$\boxed{R = 6.11 \text{ cm}}$$

. R = " 6.11 :

$$, 8+8 = " 16 \quad (2)$$

. <MCQ = 0.5 \cdot 60^\circ = 30^\circ . (3)

, ΔDMC , Q , C) ΔCMQ

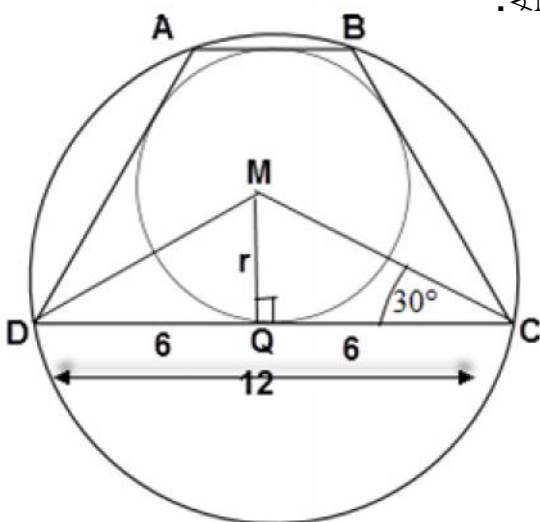
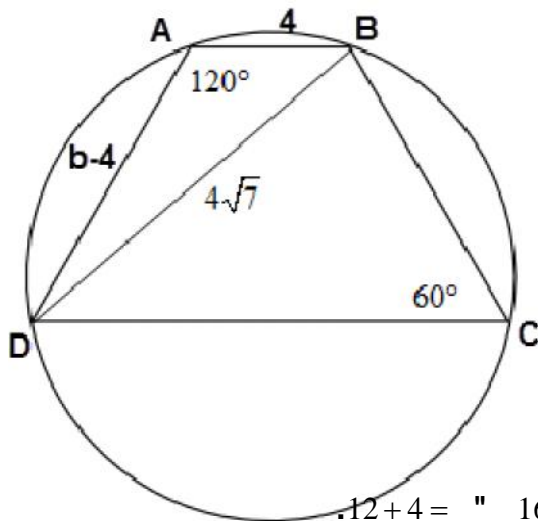
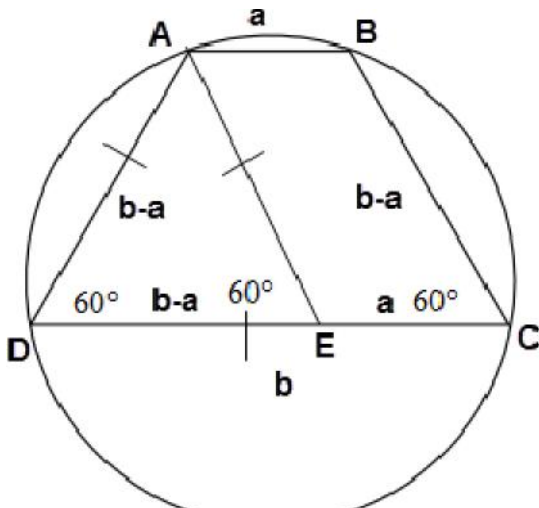
(CQ

$$\tan 30^\circ = \frac{r}{QC}$$

$$6 \tan 30^\circ = r$$

$$\boxed{r = 2\sqrt{3} \approx 3.464 \text{ cm}}$$

. r = " 2\sqrt{3} \approx 3.464 :



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

$x \neq 2$:

(2)

$x = 2$, $x = 2$

$y = a$, $\lim_{x \rightarrow \infty} \frac{2}{x-2} = \lim_{x \rightarrow \infty} \frac{2}{(x-2)^2} = 0$

$y = a$, $x = 2$:

(3)

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

$$f'(x) = +\frac{2}{(x-2)^2} + \frac{0 - 2(x-2) \cdot 1}{(x-2)^4}$$

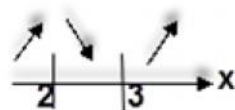
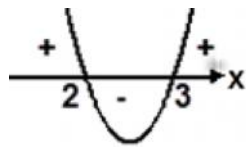
$$f'(x) = \frac{2}{(x-2)^2} - \frac{2(x-2)}{(x-2)^4}$$

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

$$f'(x) = \frac{2(x-2)(x-2-1)}{(x-2)^4}$$

$$f'(x) = \frac{2(x-2)(x-3)}{(x-2)^4}$$

$0 = x - 3 \rightarrow x = 3 \rightarrow y = a - 1 \rightarrow (3, a - 1)$

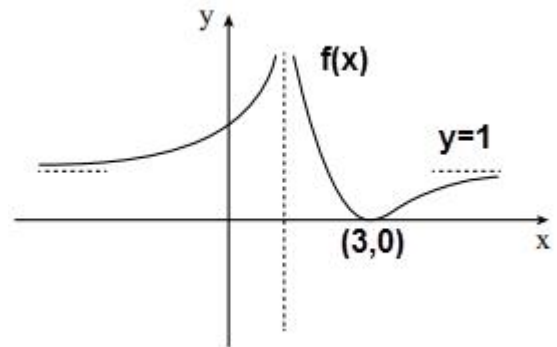


$x = 3 - () x = 2$

$(3, a - 1)$:

$2 < x < 3$: , $x < 2$ $x > 3$: (4)

$(3, a)$, $x =$, $y =$) $a = 1 - a - 1 = 0$
 $a = 1 :$



$y = 1$, $f(x)$

$g(x) = |f(x) + k|$

$g(x) = |f(x) + k|$

$(3, |(0+k)|) = (3, |k|)$,

$k = \pm 1 - |k| = 1 -$

$k = \pm 1 :$

I , C - II .
 , f(x) II
 . f'(x) I
 . f'(x) - I , f(x) - II :

. f''(-1) = 0 x = -1 - f(x) - . (b > 1) f'(x) = x(x+b)^3 .

$$f''(x) = (x+b)^3 + 3x(x+b)^2$$

$$f''(x) = (x+b)^2(4x+b)$$

$$0 = (x+b)^2(4x+b)$$

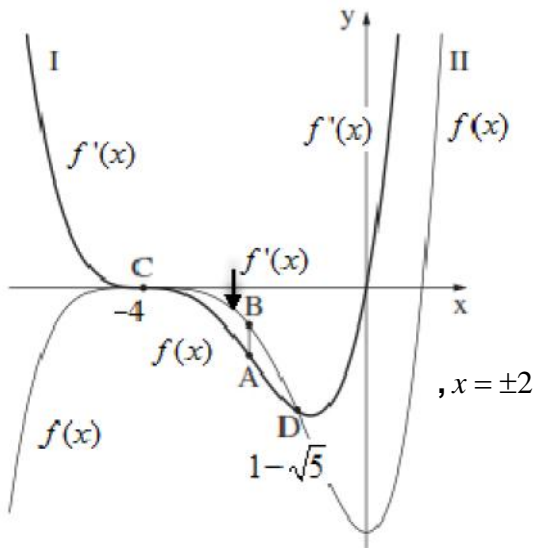
$$0 = x+b \rightarrow 0 = -1+b \rightarrow \cancel{b=1} \leftarrow b > 1$$

$$0 = 4x+b \rightarrow 0 = 4(-1)+b \rightarrow \boxed{b=4} \text{ o.k.}$$

$$. b = 4 :$$

. -4 < x < 1 - \sqrt{5} , AB

$$. AB = y_B - y_A = f(x) - f'(x) - , x - AB -$$



$$AB = f(x) - f'(x)$$

$$(AB)' = f'(x) - f''(x)$$

$$(AB)' = x(x+4)^3 - (x+4)^2(4x+4)$$

$$(AB)' = (x+4)^2 [x(x+4) - (4x+4)]$$

$$(AB)' = (x+4)^2 (x^2 + 4x - 4x - 4)$$

$$\boxed{(AB)' = (x+4)^2 (x^2 - 4)}$$

$$. x = -2$$

$$, AB(-4) = AB(1 - \sqrt{5}) = 0 ,$$

AB

AB

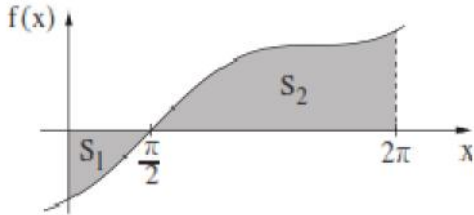
$$, x_A = x_B = -2 :$$

. $S_1 + S_2 = 10f^2 + 16$: , $10f^2 + 16$.

. $\int_0^{2f} f(x) dx = 8f^2$

. $-S_1 + S_2 = 8f^2$ - , $S_1 = \int_0^{\frac{f}{2}} (0 - f(x)) dx$

:



- $\begin{cases} S_1 + S_2 = 10f^2 + 16 \\ -S_1 + S_2 = 8f^2 \end{cases}$

$2S_1 = 2f^2 + 16$

$S_1 = f^2 + 8$

. $S_1 = f^2 + 8$:

. $F(0) = 0$: , $F(\frac{f}{2})$.

$S_1 = \int_0^{\frac{f}{2}} (0 - f(x)) dx$

$f^2 + 8 = -F(\frac{f}{2}) + F(0)$

. $f^2 + 8 = -F(\frac{f}{2}) + 0$

$F(\frac{f}{2}) = -f^2 - 8$

. $F(\frac{f}{2}) = -f^2 - 8$:

. $f(\frac{f}{2}) = 0$

$f'(x) = 8\sin x + 8$: , $f(x)$.

$f(x) = \int f'(x) dx$

$f(x) = \int (8\sin x + 8) dx$

$f(x) = -8\cos x + 8x + c$

. $0 = -9\cos(\frac{f}{2}) + 8(\frac{f}{2}) + c \leftarrow f'(\frac{f}{2}) = 0$

$0 = -9 \cdot 0 + 4f + c$

$c = -4f$

$f(x) = -8\cos x + 8x - 4f$

. $f(x) = -8\cos x + 8x - 4f$:

..