

. $x+m$

A -

 $x -$

:

$s -$ "	$t -$	$v -$ "	
45	$\frac{45}{x+m}$	$x+m$	
20	$\frac{20}{x}$	x	

B -

$$\frac{45}{x+m} = \frac{20}{x} + 1, \quad ,$$

:

$$\frac{45}{x+m} = \frac{20}{x} + 1 \quad / \cdot x(x+m) \neq 0$$

$$45x = 20(x+m) + x(x+m)$$

$$45x = 20x + 20m + x^2 + mx$$

$$x^2 + (m-25)x + 20m = 0$$

$$x_{1,2} = \frac{25-m \pm \sqrt{(m-25)^2 - 80m}}{2}$$

$$x_{1,2} = \frac{25-m \pm \sqrt{m^2 - 130m + 625}}{2}$$

$$\Delta \geq 0, \quad ,$$

$$m^2 - 130m + 625 \geq 0$$

$$m_{1,2} = \frac{130 \pm 120}{2} \rightarrow m = 125, m = 5$$

$$m \leq 5 \quad m \geq 125 : \quad ,$$

.

$$, 0 < m < 5$$

$$x_2 = \frac{25-m - \sqrt{m^2 - 130m + 625}}{2}, \quad x_1 = \frac{25-m + \sqrt{m^2 - 130m + 625}}{2} :$$

$$(\cdot \quad x_1 \quad) x_1 - x_2 < 11 \quad .$$

$$x_1 - x_2 = \frac{25 - m + \sqrt{m^2 - 130m + 625}}{2} - \frac{25 - m - \sqrt{m^2 - 130m + 625}}{2}$$

$$\sqrt{m^2 - 130m + 625} < 11$$

$$0 < m < 5 \quad , \quad ,$$

$$m^2 - 130m + 625 < 121$$

$$m^2 - 130m + 504 < 0$$

$$m_{1,2} = \frac{130 \pm 122}{2} \rightarrow m = 4, \quad m = 126$$

$$4 < m < 126 \quad ,$$

$$4 < m < 5 \quad 0 < m < 5$$

$$4 < m < 5 :$$

$$1^2 - 3^2 + 5^2 - 7^2 + \dots - (2n-1)^2 = -2n^2 \quad (1)$$

$$1^2 - 3^2 = -8 = -2 \cdot 2^2 = -8$$

$$, (\quad) \quad n = k \quad (2)$$

$$1^2 - 3^2 + 5^2 - 7^2 + \dots - (2k-1)^2 = -2k^2 :$$

$$" \quad , n = k + 2 \quad (3)$$

$$\frac{1^2 - 3^2 + 5^2 - 7^2 + \dots - (2k-1)^2 + (2k+1)^2 - (2k+3)^2}{\downarrow} = -2(k+2)^2$$

$$\Leftrightarrow -2k^2 + 4k^2 + 4k + 1 - (4k^2 + 12k + 9) = -2(k+2)^2$$

$$\Leftrightarrow -2k^2 + \cancel{4k^2} + 4k + 1 - \cancel{4k^2} - 12k - 9 = -2(k+2)^2$$

$$\Leftrightarrow -2k^2 - 8k + 8 = -2(k+2)^2$$

$$\Leftrightarrow -2(k^2 + 4k + 4) = -2(k+2)^2$$

$$\Leftrightarrow -2(k+2)^2 = -2(k+2)^2$$

$$n = k + 2 \quad , n = 2 \quad (4)$$

$$c = 2n + 1 : \quad 1^2 - 3^2 + 5^2 - 7^2 + \dots + c^2 = 1921$$

$$1^2 - 3^2 + 5^2 - 7^2 + \dots - (2n-1)^2 + (2n+1)^2 = 1921 :$$

$$-2n^2 + (2n+1)^2 = 1921 :$$

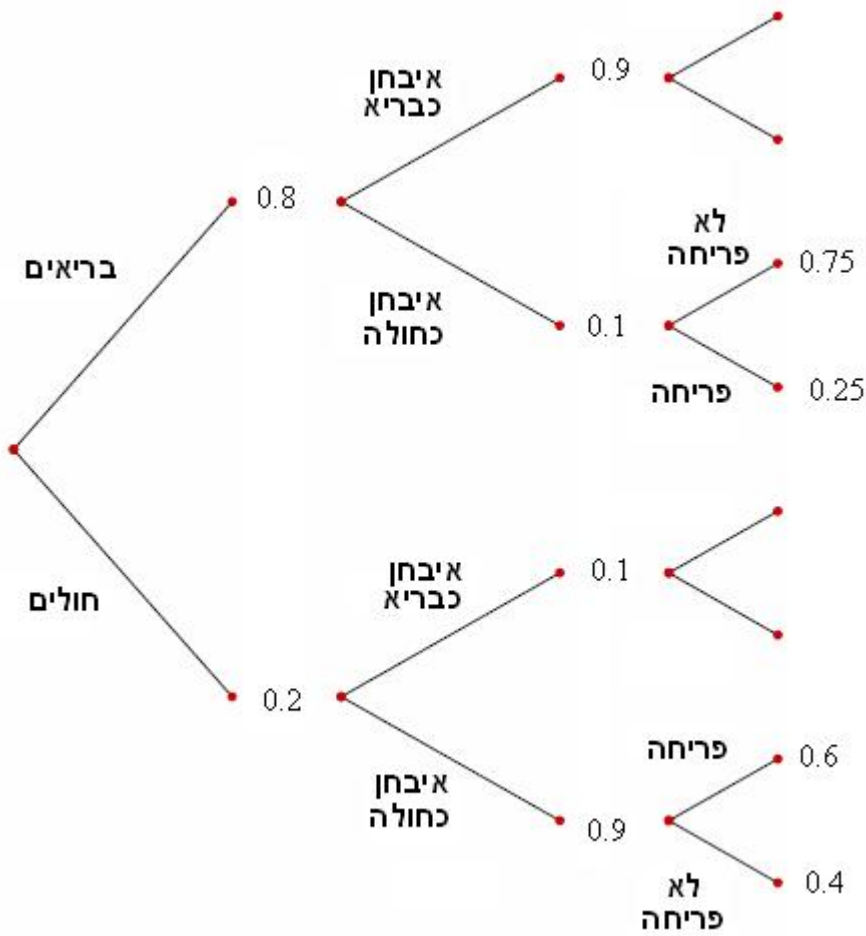
$$2n^2 + 4n - 1920 = 0$$

$$n_{1,2} = \frac{-4 \pm 124}{4} \rightarrow n = 30, \quad n = -32$$

$$c = 2 \cdot 30 + 1 = 61$$

$$c = 61 :$$

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$$P(\text{wrong diagnose}) = 0.8 \cdot 0.1 + 0.2 \cdot 0.1 = 0.1$$

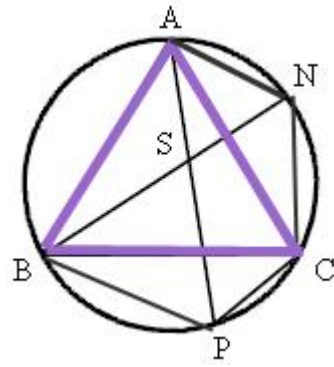
10% - :

!!!!

$$P(\text{יש לו פריחה} \mid \text{יש לו פריחה} \cap \text{תושב חולה}) = \frac{P(\text{יש לו פריחה} \cap \text{תושב חולה})}{P(\text{יש לו פריחה})}$$

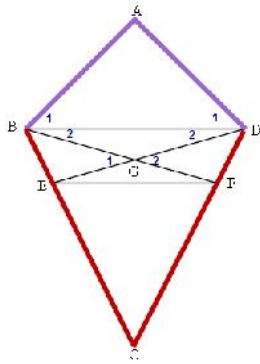
$$\frac{0.2 \cdot 0.9 \cdot 0.6}{0.8 \cdot 0.1 \cdot 0.25 + 0.2 \cdot 0.9 \cdot 0.6} = \frac{0.108}{0.128} = \frac{27}{32}$$

$$\frac{27}{32}$$



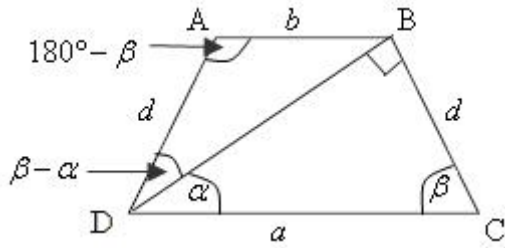
ABC .1
 PC || BN .2
 : "
 BSP .
 SPCN .
 .AN = PC .

	ABC	3	1
	$\angle BAC = \angle ABC = \angle ACB = 60^\circ$	4	2
	$\angle APB = \angle ACB$	5	
	$\angle APB = 60^\circ$	6	5, 4
	$\angle APC = \angle ABC$	7	
	PC BN	8	4, 7
	$\angle BSP = \angle APC$	9	8
	$\angle BSP = 60^\circ$	10	9, 7, 4
$180^\circ \triangle BSP$	$\angle SBP = 60^\circ$	11	10, 6
	$\angle BSP = \angle APB = \angle SBP$	12	11, 10, 6
$\triangle BSP$	BSP	13	12, 8
. . .			
	$\angle N = \angle BAC$	14	
	$\angle N = 60^\circ$	15	14, 4
	$\angle N = \angle BSP$	16	15, 10
	NC SP	17	16
	SPCN	18	17, 8
. . . .			
	$\angle NCA = \angle CAP$	19	17
	AN = PC	20	19
. . . .			



$BC = DC$.3 $AB = AD$.2 $ABCD$.1
 $\angle ABF = \angle CBF = \frac{\angle ABC}{2}$.5 $\angle ADE = \angle CDE = \frac{\angle ADC}{2}$.4
 : "
 $\triangle ABGE \cong \triangle DGF$ (2) $GB = GD$ (1) .
 . DBEF .

. . .			
	ABCD	6	1
	$\angle ABC = \angle ADC$	7	6
	$\angle ABF = \angle CBF = \frac{\angle ABC}{2}$	8	5
	$\angle ADE = \angle CDE = \frac{\angle ADC}{2}$	9	4
	$\angle ABF = \angle ADG$	10	9, 8, 7
	$AB = AD$	11	2
$\triangle ABD$	$\angle B_1 = \angle D_1$	12	11, 10, 6
	() $\angle B_2 = \angle D_2$	13	12, 10
$\triangle BGD$	() $GB = GD$	14	13
	() $\angle G_1 = \angle G_2$	15	14, 4
. .	$\triangle BGE \cong \triangle DGF$	16	15, 14, 13
. . .			
	$BC = DC$	17	3
	$BE = DF$	18	16
	$BC - BE = DC - DF$	19	18, 17
	$CE = CF$	19	17
	$\frac{CE}{BE} = \frac{CF}{DF}$	20	18, 20
	$EF \parallel BD$	21	18, 20
C	$BE \not\parallel DF$	22	
	DBEF	23	21, 22
	DBEF	24	23, 18
. . .			



∴ , ,
 () ABCD
 () ∠BCD = S
 () ∠ADC = S
 (180°) ∠A = 180° - S
 () BC = AD = d

ΔBDC: $BD^2 = BC^2 + CD^2 - 2BC \cdot CD \cdot \cos \angle BCD$

$BD^2 = d^2 + a^2 - 2 \cdot d \cdot a \cdot \cos S$

$\cos S = \frac{d^2 + a^2 - BD^2}{2ad}$

ΔABD: $BD^2 = AD^2 + AB^2 - 2AD \cdot AB \cdot \cos \angle BAD$

$BD^2 = d^2 + b^2 - 2 \cdot d \cdot b \cdot \cos(180^\circ - S)$

$\cos S = \frac{BD^2 - d^2 - b^2}{2bd} \leftarrow \cos x = -\cos(180^\circ - x)$

$\frac{d^2 + a^2 - BD^2}{\cancel{2ad}} = \frac{BD^2 - d^2 - b^2}{\cancel{2bd}}$

$bd^2 + a^2b - b \cdot BD^2 = a \cdot BD^2 - ad^2 - ab^2$

$bd^2 + a^2b + ad^2 + ab^2 = a \cdot BD^2 + b \cdot BD^2$

$(a+b)d^2 + ab(a+b) = (a+b)BD^2$

$(a+b)(d^2 + ab) = (a+b)BD^2 \quad /: (a+b) \neq 0$

$BD = \sqrt{ab + d^2}$

ΔABD

$\frac{b}{\sin(S-r)} = \frac{d}{\sin r} \rightarrow (1) \frac{\sin r}{\sin(S-r)} = \frac{d}{b}$

∴ , ΔBDC - $r + S = 90^\circ$

$a^2 = (\sqrt{ab + d^2})^2 + d^2$

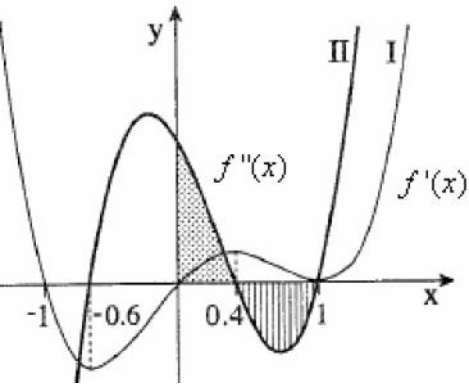
$a^2 = ab + 2d^2$

$a^2 - ab = 2d^2 \quad /: 2b^2 \neq 0$

$\frac{a^2 - ab}{2b^2} = \frac{d^2}{b^2} \rightarrow (2) \frac{d}{b} = \sqrt{\frac{a^2 - ab}{2b^2}}$

$\frac{\sin r}{\sin(S-r)} = \sqrt{\frac{a^2 - ab}{2b^2}}$

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$$f''(x) = 0 \quad , \quad f'(x) : \quad .$$

$$, \quad \text{II} \quad x=0.4 \quad \text{I}$$

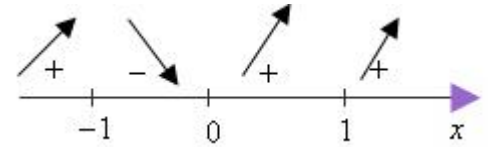
$$. \quad \text{II} \quad x=-0.6 \quad \text{I}$$

$$f''(x) - \text{II} \quad , \quad f'(x) - \text{I} \quad :$$

$$. \quad f(x)$$

$$. \quad f(x) \quad - \quad f'(x) \quad x < -1 \quad x > 0$$

$$. \quad f(x) \quad f'(x) \quad -1 < x < 0$$



$$(\quad x=1) \quad x=-1 \quad , \quad x=0 :$$

$$x=-1 \quad , \quad x=0 :$$

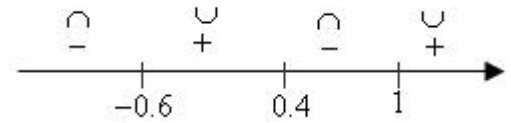
$$. \quad f(x)$$

$$f''(x) > 0 \quad -0.6 < x < -0.4 \quad x > 1$$

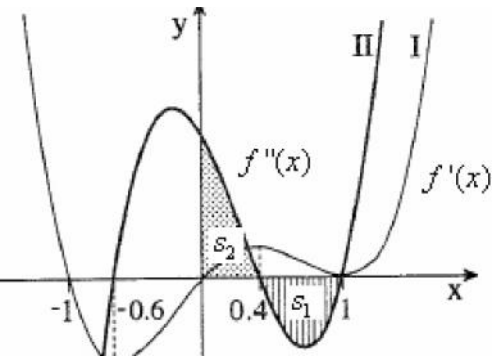
$$. \cup \quad f(x)$$

$$f''(x) < 0 \quad x < -0.6 \quad 0.4 < x < 1$$

$$. \cap \quad f(x)$$



$$x = -0.6 \quad , \quad x = 0.4 \quad , \quad x = 1 :$$



$$S_1 = \int_{0.4}^1 (0 - f''(x)) dx = -f'(x) \Big|_{0.4}^1 = -f'(1) + f'(0.4) = -0 + f'(0.4) = f'(0.4)$$

$$S_2 = \int_0^{-0.6} (f''(x) - 0) dx = f'(x) \Big|_0^{-0.6} = f'(-0.6) - f'(0) = f'(-0.6) - 0 = f'(-0.6)$$

$$S_1 = S_2 :$$

! :

$$f(x) = x - \frac{\sin(2x)}{2}$$

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

$$f'(x) = 1 - (1 - 2\sin^2 x)$$

$$\boxed{f'(x) = 2\sin^2 x}$$

!

$$x \neq f k, \sin x \neq 0 \tag{1}$$

$$x = f k$$

$$f(x) :$$

$$x = f k, \tag{2}$$

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

$$\boxed{f''(x) = 2 \sin 2x}$$

$$\sin 2x = 0 \rightarrow x = \frac{f}{2} k$$

((1))

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

$$f(x) :$$

$$g(x) = x + \sin^2 x$$

$$-f \leq x \leq f, y = x$$

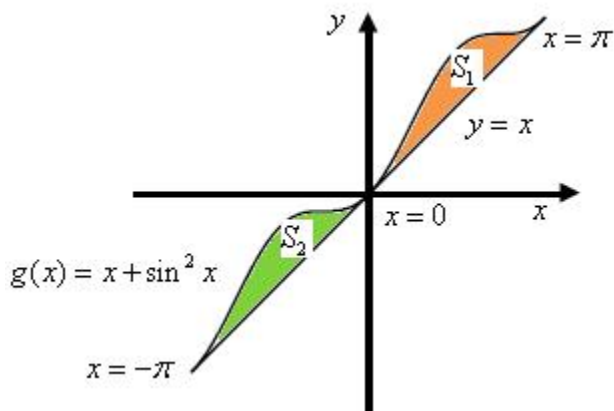
$$x + \sin^2 x = x$$

$$\sin^2 x = 0$$

$$\sin x = 0$$

$$x = -f, x = 0, x = f$$

$$y = x \quad g(x) \quad x + \sin^2 x \geq x$$



$$S = \int_0^f (x + \sin^2 x - x) dx + \int_{-f}^0 (x + \sin^2 x - x) dx$$

$$S = \int_0^f (\sin^2 x) dx + \int_{-f}^0 (\sin^2 x) dx$$

$$S = \left[\frac{x}{2} - \frac{\sin(2x)}{4} \right]_0^f + \left[\frac{x}{2} - \frac{\sin(2x)}{4} \right]_{-f}^0 \leftarrow$$

$$S = \left(\left(\frac{f}{2} - \frac{\sin(2f)}{4} \right) - \left(\frac{0}{2} - \frac{\sin(2 \cdot 0)}{4} \right) \right) + \left(\left(\frac{0}{2} - 4 \right) - \left(\frac{-f}{2} - \frac{\sin(2f)}{4} \right) \right)$$

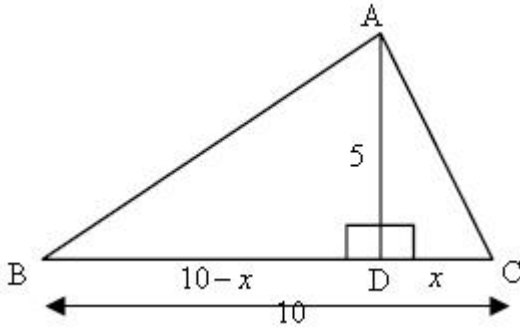
$$S = \frac{f}{2} + \frac{f}{2}$$

$$\boxed{S = f}$$

" f :

עלונה בקנה מידות

(") CD - x



$$f(x) = 10 + \sqrt{5^2 + x^2} + \sqrt{5^2 + (10-x)^2}$$

$$f(x) = 10 + \sqrt{25 + x^2} + \sqrt{125 - 20x + x^2}$$

$$f'(x) = \frac{x}{\sqrt{25 + x^2}} + \frac{2x - 20}{2\sqrt{125 - 20x + x^2}}$$

$$f'(x) = \frac{x\sqrt{125 - 20x + x^2} + (x - 10)\sqrt{25 + x^2}}{\sqrt{25 + x^2}\sqrt{125 - 20x + x^2}}$$

$$0 = x\sqrt{125 - 20x + x^2} + (x - 10)\sqrt{25 + x^2}$$

$$x\sqrt{125 - 20x + x^2} = (10 - x)\sqrt{25 + x^2} \quad (*)^2$$

$$x^2(125 - 20x + x^2) = (100 - 20x + x^2)(25 + x^2)$$

$$125x^2 - 20x^3 + x^4 = 2500 + 100x^2 - 500x - 20x^3 + 25x^2 + x^4$$

$$500x = 2500$$

$$x = 5 \quad 5\sqrt{125 - 20 \cdot 5 + 5^2} = (10 - 5)\sqrt{25 + 5^2} \rightarrow 5\sqrt{50} = 5\sqrt{50} \text{ o.k.}$$

$$f'(4) = \frac{4\sqrt{125 - 20 \cdot 4 + 4^2} + (4 - 10)\sqrt{25 + 4^2}}{+} = -7.17 < 0$$

$$f'(6) = \frac{6\sqrt{125 - 20 \cdot 6 + 6^2} + (6 - 10)\sqrt{25 + 6^2}}{+} = 7.17 > 0$$

$$, x = 5$$

$$AC = \sqrt{5^2 + 5^2} = \sqrt{50} = 5\sqrt{2}$$

$$" 5\sqrt{2} , " 5\sqrt{2} , " 10 :$$

()

$$, 45^\circ :$$