

$x \geq 6$  :

6	$\frac{6}{x}$	$x$	
.50% " 4			
2	50%	4	
8	$\frac{8}{x+4}$	$x+4$	
$x+4-8 = x-4$ :			
0		$0.5x-2$	
8	$\frac{8}{0.5x+6}$	$x+4-(0.5x-2) = 0.5x+6$	

5% -

( )

$$\frac{6}{x} + 0.05 = \frac{8}{0.5x+6}$$

:

$$\begin{aligned} \frac{6}{x} + 0.05 &= \frac{8}{0.5x+6} \\ \Leftrightarrow 3x+36+0.025x^2+0.3x &= 8x \\ \Leftrightarrow 0.025x^2-4.7x+36 &= 0 \\ \Leftrightarrow x_{1,2} &= \frac{4.7 \pm 4.3}{0.05} \\ \boxed{x_1 = 180} \quad \boxed{x_2 = 8} \end{aligned}$$

.( $x \geq 6$

) " 180 " 8 :

$$62 - \quad 2 + 2 \cdot 5 + 2 \cdot 5^2 + 2 \cdot 5^3 + \dots + 2 \cdot 5^{3n-1}$$

$$S_n = \frac{a_1(q^n - 1)}{q - 1} :$$

$$: \quad , \quad ,$$

$$a^n - b^n = (a - b)(a^{n-1} + a^{n-2}b + a^{n-3}b^2 + \dots + b^{n-1})$$

$$2 + 2 \cdot 5 + 2 \cdot 5^2 + 2 \cdot 5^3 + \dots + 2 \cdot 5^{3n-1}$$

$$= 2 \cdot (1 + 5 + 5^2 + 5^3 + \dots + 5^{3n-1}) =$$

$$= 2 \cdot \frac{1(5^{3n} - 1)}{5 - 1} =$$

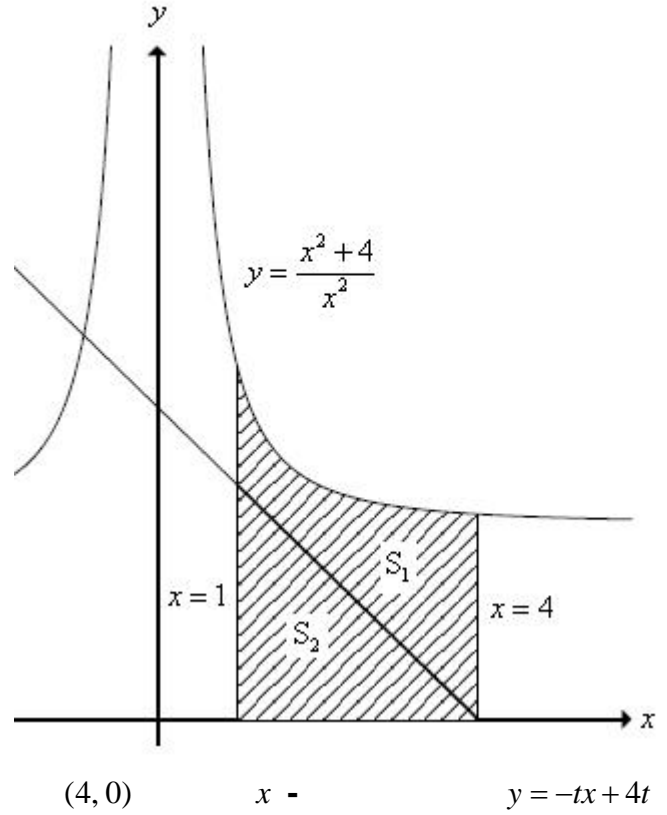
$$= \frac{(125^n - 1^n)}{2} =$$

$$= \frac{(125 - 1)(125^{n-1} + 125^{n-2} \cdot 1 + 125^{n-3} \cdot 1^2 + \dots + 1^{n-1})}{2}$$

$$= 62 \cdot (125^{n-1} + 125^{n-2} \cdot 1 + 125^{n-3} \cdot 1^2 + \dots + 1^{n-1})$$

,

62 -



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

$S_2$

,  $S_1 + S_2$  :

$$\begin{aligned}
 S_1 + S_1 &= \int_1^4 \left(5 + \frac{4}{x^2}\right) dx = \\
 S_1 + S_1 &= \left(5x - \frac{4}{x}\right) \Big|_1^4 \\
 &= \left(5 \cdot 4 - \frac{4}{4}\right) - \left(5 \cdot 1 - \frac{4}{1}\right) \\
 &= 19 - 4 = 18
 \end{aligned}$$

.  $S_2$

9 -

$$y = -t + 4t = 3t : \quad x = 1$$

$$9 = \frac{3 \cdot 3t}{2} \rightarrow \boxed{t = 2} :$$

$$t = 2 :$$

, " v

. " S

" 0.004v

0.001v<sup>2</sup> -

32

**מינימום**

**הוצאות הנסיעה של המכונית**

$$t = \frac{S}{v}$$

:

$$f(v) = 0.004vs + 0.001 \frac{v^2 s}{v} + \frac{32s}{v}$$

$$f(v) = s \cdot \left( 0.005v + \frac{32}{v} \right)$$

$$f'(v) = s \cdot \left( 0.005 - \frac{32}{v^2} \right)$$

$$f'(v) = s \cdot \left( \frac{0.005v^2 - 32}{v^2} \right)$$

$$0.005v^2 - 32 = 0$$

$$v^2 = 6400$$

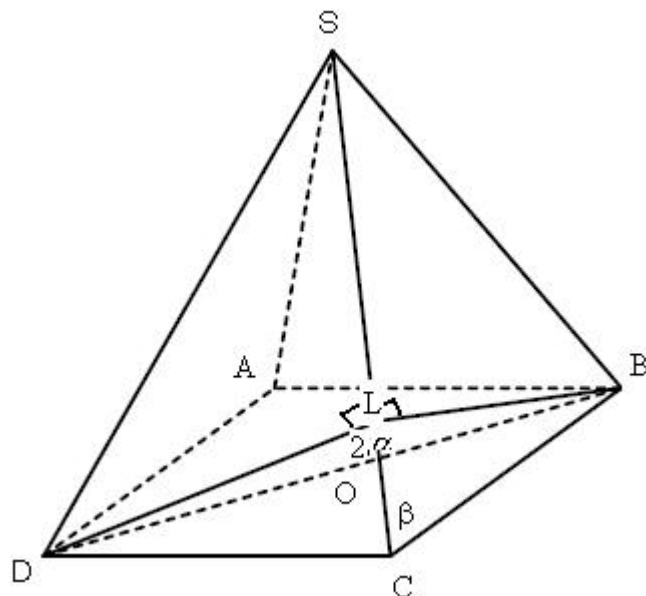
$$v = 80 \quad \leftarrow v > 0$$

( )

$$f'(70) = -7.5s < 0 \quad f'(90) = 8.5s > 0$$

0	70	80	90	x
	-	0	+	y'
	↘	<b>Min</b>	↗	

" 80 :



SDC - SBC (2r)

(SC

) ( )

( )  $\triangle DLC \cong \triangle BLC$

$\triangle DLB$  - -

2r - ,

$BD = x\sqrt{2}$

" ,

x -

:

$\triangle BLD$

$$\frac{x\sqrt{2}}{\sin 2r} = \frac{BL}{\sin(90^\circ - r)}$$

$$BL = \frac{x\sqrt{2} \cos r}{2 \sin r \cos r}$$

$$BL = \frac{x\sqrt{2}}{2 \sin r}$$

ΔBLC

$$\sin \beta = \frac{\frac{x\sqrt{2}}{2}}{x}$$

$$\sin \beta = \frac{x\sqrt{2}}{2x \sin r}$$

$$\sin r \cdot \sin \beta = \frac{\sqrt{2}}{2}$$

$$\boxed{\sin r \cdot \sin \beta = \sin 45^\circ}$$

!

$$\frac{BC}{\sin \angle BSC} = 2R, \Delta SBC, \quad " .$$

$$R = \frac{x}{2 \sin(180 - 2\beta)} = \frac{x}{2 \sin 2\beta} :$$

$$\sin 2\beta = 2 \sin \beta \cos \beta = 2 \sin \beta \sqrt{1 - \sin^2 \beta} \quad \leftarrow \cos \beta > 0 \leftarrow 0^\circ < \beta < 90^\circ$$

$$\sin r \cdot \sin \beta = \sin 45^\circ, \quad "$$

$$\sin 2\beta = \frac{2 \sin 45^\circ}{\sin r} \sqrt{1 - \left(\frac{\sin 45^\circ}{\sin r}\right)^2}$$

:

$$\frac{\frac{x}{2 \sin 45^\circ} \sqrt{1 - \left(\frac{\sin 45^\circ}{\sin r}\right)^2}}{\frac{x}{\sin r}} = \frac{4 \sin 45^\circ}{\sin r} \sqrt{1 - \left(\frac{\sin 45^\circ}{\sin r}\right)^2}$$

$$\left( \frac{4 \sin 45^\circ}{\sin r} \sqrt{1 - \left(\frac{\sin 45^\circ}{\sin r}\right)^2} : \right.$$

:

$$\begin{aligned} & \frac{4 \sin 45^\circ}{\sin r} \sqrt{1 - \left(\frac{\sin 45^\circ}{\sin r}\right)^2} = \\ & = \frac{4\sqrt{2}}{2 \sin r} \sqrt{1 - \frac{1}{2 \sin^2 r}} = \\ & = \frac{2\sqrt{2}}{\sin r} \sqrt{\frac{2 \sin^2 r - 1}{2 \sin^2 r}} = \\ & = \frac{2\sqrt{2}}{\sqrt{2} \sin^2 r} \sqrt{-\cos 2r} = \\ & = \frac{2\sqrt{-\cos 2r}}{\sin^2 r} \end{aligned}$$