

. (")

 x

, " 6 , $80\% \cdot x = \frac{80}{100} \cdot x = 0.8x$, 80%

. " 4 , $20\% \cdot x = \frac{20}{100} \cdot x = 0.2x$, 20% -

| " s | " v | t | |
|--------|-----|------------------|--|
| $0.8x$ | 6 | $\frac{0.8x}{6}$ | |
| $0.2x$ | 4 | $\frac{0.2x}{4}$ | |
| x | 5 | $\frac{x}{5}$ | |

,

$$\frac{0.8x}{6} + \frac{0.2x}{4} + \frac{1}{4} = \frac{x}{5} :$$

:

$$\frac{0.8x}{6} + \frac{0.2x}{4} + \frac{1}{4} = \frac{x}{5} \quad / \cdot 60$$

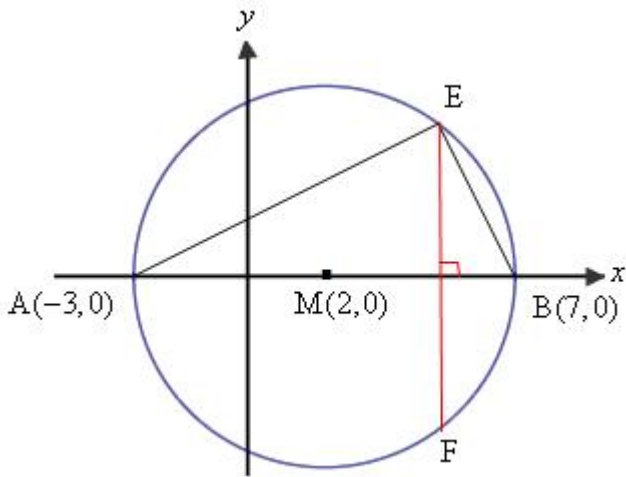
$$8x + 3x + 15 = 12x$$

$$11x + 15 = 12x$$

$$\boxed{x = 15}$$

. " 15

:



$\cdot AB = 2R = 10$,

$\cdot y_E$ -

$\cdot (x-2)^2 + y^2 = 25$

$\cdot 5$ M(2,0)

$\cdot x$ - AB

$\cdot 5$ - A(-3,0) -

$\cdot 5$ - B(7,0) :

$\cdot y = 0$

$\cdot x$ -

:

$y = 0$

$(x-2)^2 + 0^2 = 25 \rightarrow (x-2)(x-2) = 25$

$x^2 - 2x - 2x + 4 = 25 \rightarrow x^2 - 4x - 21 = 0$

$x_{1,2} = \frac{4 \pm 10}{2}$

$x_B = \frac{4+10}{2} = \frac{14}{2} = 7 \rightarrow B(7,0)$

$x_A = \frac{4-10}{2} = \frac{-6}{2} = -3 \rightarrow A(-3,0)$

$\cdot B(7,0)$, $A(-3,0)$:

$\cdot 20$ AEB

(1) .

$\cdot x$ - AB

$20 = \frac{10 \cdot y_E}{2}$

$20 = 5y_E$

$y_E = 4$

$\cdot y_E = 4$:

$y = 4$ **(2)**

$(x-2)^2 + 4^2 = 25 \rightarrow (x-2)(x-2) + 16 = 25$

$x^2 - 2x - 2x + 4 - 9 = 0 \rightarrow x^2 - 4x - 5 = 0$

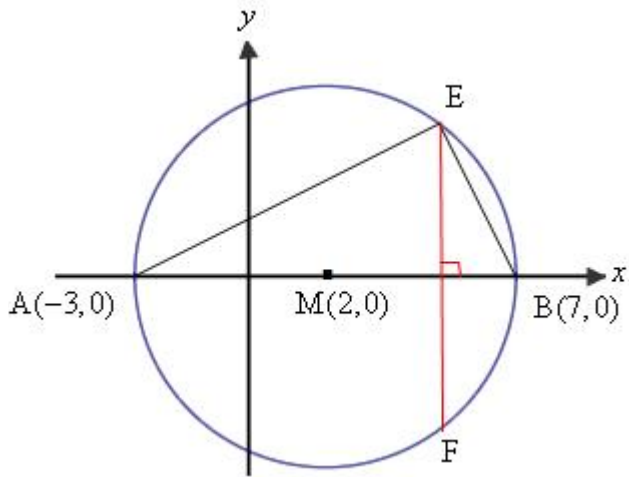
$x_{1,2} = \frac{4 \pm 6}{2}$

$x_B = \frac{4+6}{2} = \frac{10}{2} = 5 \rightarrow E(5,4)$

$x_A = \frac{4-6}{2} = \frac{-2}{2} = -1$ not o.k.

E

$\cdot x_E = 5$:



, y - EF .

, x -

$$, y_F = -y_E = -4 -$$

. (5, -4) F

$$x = 5$$

$$(5-2)^2 + y^2 = 25$$

$$9 + y^2 = 25$$

$$y^2 = 16$$

$$y_F = -4, y_E = 4$$

. F(5, -4) :

$$y = \sqrt{x} - ax$$

$$f'(4) = -\frac{3}{4} : \quad , -\frac{3}{4}$$

$$x = 4$$

$$f'(x) = \frac{1}{2\sqrt{x}} - a$$

$$-\frac{3}{4} = \frac{1}{2\sqrt{4}} - a$$

$$-\frac{3}{4} = \frac{1}{4} - a$$

$$\boxed{a=1}$$

$$a = 1 :$$

$$\boxed{y = \sqrt{x} - x} : \quad a = 1$$

$$) \quad x \geq 0 : \quad (1)$$

$$x \geq 0 :$$

$$y = 0 \quad x - \quad (2)$$

$$0 = \sqrt{x} - x \rightarrow x = \sqrt{x} \quad ()^2$$

$$x^2 = x$$

$$x^2 - x = 0 \rightarrow x(x-1) = 0$$

$$x = 0 \quad (0 = \sqrt{0} \rightarrow 0 = 0 \quad o.k)$$

$$x = 1 \quad (1 = \sqrt{1} \rightarrow 1 = 1 \quad o.k)$$

$$) \quad ($$

$$(1, 0) , (0, 0) :$$

$$(0, 0) \quad (3)$$

$$y' = \frac{1}{2\sqrt{x}} - 1$$

$$0 = \frac{1}{2\sqrt{x}} - 1 \quad / \cdot 2\sqrt{x}$$

$$0 = 1 - 2\sqrt{x}$$

$$2\sqrt{x} = 1 \quad / : 2$$

$$\sqrt{x} = 0.5$$

$$x = 0.25 \rightarrow y = \sqrt{0.25} - 0.25 = 0.25 \rightarrow (0.25, 0.25)$$

$$(0.25, 0.25) ,$$

:

$$f'(0.2) = \frac{1}{2\sqrt{0.2}} - 1 > 0, \quad f'(0.3) = \frac{1}{2\sqrt{0.3}} - 1 < 0$$

| | | | | |
|---|-----|------------|-----|------|
| 0 | 0.2 | 0.25 | 0.3 | x |
| | + | 0 | - | y' |
| | ↗ | Max | ↘ | |

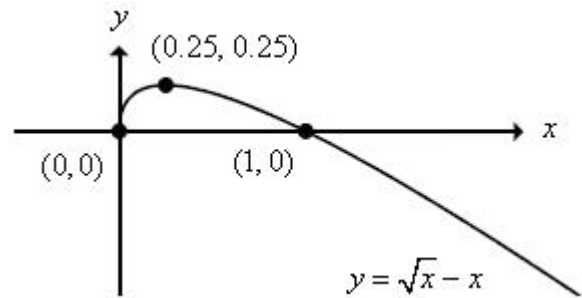
$x = 0.25$

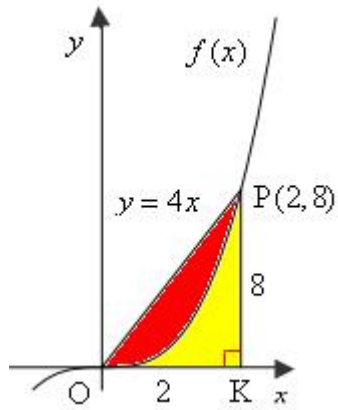
$(0.25, 0.25)$:

$x > 0.25$

, $0 < x < 0.25$:

(4)





| | |
|--------------|-----|
| S_{yellow} | |
| $y = x^3$ | |
| $y = 0$ | |
| $x = 2$ | x |
| $x = 0$ | x |

,8

,4

,8 - 4 = 4

OPK

$f(x)$

∴

$f(x) = x^3$

$x = 2 \Rightarrow 8 = x^3$, 8

P y -

$x_p = 2$ ∴

P(2,8) - O(0,0), OP

$m_{OP} = \frac{8-0}{2-0} = \frac{8}{2} = 4$

$y - 0 = 4(x - 0)$

$y = 4x$

$y = 4x$ OP ∴

∴ OPK () (1)

$S_{\Delta OPK} = \frac{OK \cdot KP}{2} = \frac{2 \cdot 8}{2} = 8$

.8 ∴

(2)

$S_{yellow} = \int_0^2 (x^3 - 0) dx$

$S_{yellow} = \frac{x^4}{4} \Big|_0^2$

$S_{yellow} = \frac{2^4}{4} - \frac{0^4}{4}$

$S_{yellow} = 4$

x (1) .

$$\frac{32}{x}$$

" 32

$$\frac{32}{x}$$

:

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
| | | | | | | |
| | | | | | | |

$$\frac{32}{x} \cdot \frac{32}{x}$$

(2)

4 -

8 - x

$$4x + 8 \cdot \frac{32}{x} = 4x + \frac{256}{x} :$$

$$4x + \frac{256}{x}$$

:

מינימום סכום אורכי כל מוטות הפרגל.

$$f(x) = 4x + \frac{256}{x}$$

$$f(x) = 4x + \frac{256}{x}$$

$$f'(x) = 4 - \frac{256}{x^2}$$

$$f'(x) = \frac{4x^2 - 256}{x^2}$$

$$0 = \frac{4x^2 - 256}{x^2}$$

$$0 = 4x^2 - 256 \rightarrow 4x^2 = 256 \rightarrow x^2 = 64 \rightarrow x = \pm 8$$

$x = 8$

()

$$f'(7) = 4 \cdot 7^2 - 256 < 0, \quad f'(9) = 4 \cdot 9^2 - 256 > 0$$

| | | | | |
|---|---|------------|---|------|
| 0 | 7 | 8 | 9 | x |
| | - | 0 | + | y' |
| | ↘ | Min | ↗ | |

$$\frac{32}{8} = 4$$

$$x = 8$$

4 - 8 :

"

$$y = -x^2 - 8x + c \qquad y = 2x + 8 \quad (1)$$

.2

2

x -

$$f'(x) = -2x - 8$$

$$2 = -2x - 8$$

$$2x = -10$$

$$\boxed{x = -5}$$

. -5

x - :

$$x = -5 \quad (2)$$

$$y = 2 \cdot (-5) + 8 = -2$$

. -2

y - :

(-5, -2)

(3)

$$-(-5)^2 - 8 \cdot (-5) + c = -2$$

$$-25 + 40 + c = -2$$

$$\boxed{c = -17}$$

$$c = -17 :$$

$$a = -1 < 0 \quad , (\quad , \quad)$$

$$y = -x^2 - 8x - 17$$

$$x_k = -\frac{b}{2a} = -\frac{-8}{-2} = -4 \rightarrow y = -(-4)^2 - 8 \cdot (-4) - 17 = -1$$

$$x = -4 \leftarrow -2x - 8 = 0 : 0 -$$

$$(-4, -1) \quad :$$