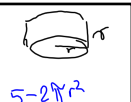


$$F = 2\pi r^2 + 2\pi r \cdot r_5 = 5$$


$$V = \pi r^2 \cdot r_5$$

$$V = \pi r^2 \cdot \frac{5 - 2\pi r^2}{2\pi r} = \frac{5r - 2\pi r^3}{2}$$

$$V(r) = \frac{5r - 2\pi r^3}{2}$$

$$V'(r) = \frac{5 - 6\pi r^2}{2}$$

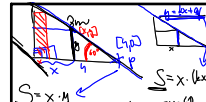
$$V'(r) = 0 \Leftrightarrow 6\pi r^2 = 5$$

$$r^2 = \frac{5}{6\pi}$$

$$r = \sqrt{\frac{5}{6\pi}}$$

$$V = \frac{5 - 2\pi r^2}{2\pi r} = \frac{5 - 2\pi \cdot \frac{5}{6\pi}}{2\pi \sqrt{\frac{5}{6\pi}}}$$

10 24-17:51



$$S = x \cdot y$$

$$y = -\sqrt{3}x + 4$$

$$S(x) = -\sqrt{3}x^2 + 4x$$

$$S'(x) = -2\sqrt{3}x + 4$$

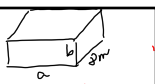
$$S'(x) = 0 \Leftrightarrow 2\sqrt{3}x = 4$$

$$x = \frac{2}{\sqrt{3}}$$

$$y = -\sqrt{3} \cdot \frac{2}{\sqrt{3}} + 4 = 2$$

$$S = 2 \times 2\sqrt{3}$$

10 24-18:14



$$V = 1000m^3 = 8ab$$

$$C = 8a \cdot 250 + (2 \cdot a \cdot b + 2 \cdot a \cdot h) \cdot 225$$

$$C = 200 \frac{1000}{b} + (2 \cdot \frac{125}{b} \cdot b + 2 \cdot \frac{125}{b} \cdot h) \cdot 225$$

$$= \frac{200000}{b} + (250 + 250 \cdot \frac{h}{b}) \cdot 225$$

$$= \frac{200000}{b} + 250 \cdot 225 + 16 \cdot 225 \cdot \frac{h}{b}$$

$$= \frac{200000}{b} + C + 3600 \frac{h}{b}$$

$$C(b) = -\frac{200000}{b} + \frac{3600h}{b}$$

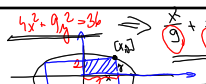
$$C'(b) = 0 \Leftrightarrow 250000 = 3600b^2$$

$$b^2 = \frac{25000}{36}$$

$$b = \frac{500}{6}$$

$$C'(b) < 0$$

10 24-18:26



$$4x^2 + 9y^2 = 36$$

$$S = \pi \cdot x \cdot y$$

$$S(x) = \frac{\pi}{3} \sqrt{36 - 4x^2}$$

$$S'(x) = \frac{\pi}{3} \cdot \frac{-8x}{2\sqrt{36 - 4x^2}} = -\frac{4\pi x}{3\sqrt{36 - 4x^2}}$$

$$S'(x) = 0 \Leftrightarrow 36 - 4x^2 = 0$$

$$4x^2 = 36$$

$$x^2 = 9$$

$$x = 3$$

$$y = \frac{\sqrt{36 - 4 \cdot 9}}{3} = \frac{0}{3} = 0$$

10 24-18:36

$$Z = -400000 - 500n + n \cdot (1200 - \frac{n}{10})$$

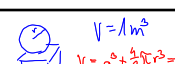
$$Z = -400000 + 700n - \frac{n^2}{10}$$

$$Z'(n) = 700 - \frac{2n}{10}$$

$$Z'(n) = 0 \Leftrightarrow 2n = 7000$$

$$n = 3500$$

10 24-18:47



$$V = 1m^3$$

$$V = \pi r^2 h = 1$$

$$h = \frac{1}{\pi r^2}$$

$$C = 2\pi r^2 + 2\pi r h$$

$$C(r) = 2\pi r^2 + 2\pi r \cdot \frac{1}{\pi r^2} = 2\pi r^2 + \frac{2}{r}$$

$$C'(r) = 4\pi r - \frac{2}{r^2}$$

$$C'(r) = 0 \Leftrightarrow 4\pi r^3 = 2$$

$$r^3 = \frac{1}{2\pi}$$

$$r = \sqrt[3]{\frac{1}{2\pi}}$$

10 24-18:54

$f(x) = x + \frac{1}{x}$   
 $S(x) = 1 - \frac{1}{x^2}$   
 $f = 0 \Leftrightarrow x^2 - 1 = 0$   
 $x = \pm 1$   
 $|x| = 1$

$d = \sqrt{x^2 + (5-x)^2}$   
 $d = \sqrt{x^2 + 25 - 10x}$   
 $d'(x) = \frac{1}{2} \cdot \frac{4x - 10}{\sqrt{x^2 - 10x + 25}}$   
 $d'(x) = 0 \Leftrightarrow 4x - 10 = 0$   
 $x = \frac{5}{2}$

10 24-19:11

$f = 4 - x^2$

$\sigma = 4x + 2y$   
 $\sigma(x) = 4x + 2(4 - x^2)$   
 $\sigma'(x) = 4 - 4x$   
 $\sigma'(x) = 0 \Leftrightarrow 4 - 4x = 0$   
 $x = 1$

$S = 2x \cdot y = 2x(4 - x^2) = 8x - 2x^3$   
 $S'(x) = 8 - 6x^2$   
 $S'(x) = 0 \Leftrightarrow 8 - 6x^2 = 0$   
 $6x^2 = 8$   
 $x^2 = \frac{4}{3}$   
 $x = \frac{2}{\sqrt{3}}$   
 $x = \frac{2\sqrt{3}}{3}$

10 24-19:06

$\sigma = a$   
 $\sigma = 2x + 2y$   
 $\mu = \sqrt{x^2 + y^2}$   
 $2x + 2y = a$   
 $x = \frac{a - 2y}{2}$   
 $\mu = \sqrt{\frac{(a - 2y)^2}{4} + y^2}$   
 $\mu = \sqrt{\frac{a^2 - 4ay + 4y^2}{4} + y^2}$   
 $\mu = \frac{1}{2} \sqrt{a^2 - 4ay + 4y^2 + 4y^2}$   
 $\mu = \frac{1}{2} \sqrt{a^2 - 4ay + 8y^2}$   
 $\mu' = \frac{1}{2} \cdot \frac{4y - 4a}{\sqrt{a^2 - 4ay + 8y^2}}$   
 $\mu' = 0 \Leftrightarrow 4y - 4a = 0$   
 $y = \frac{4a}{4} = a$   
 $x = \frac{a - 2a}{2} = \frac{-a}{2}$

10 24-19:24