

$$\textcircled{3} \frac{2\sqrt{x} - \sqrt{2x} + 3}{2} = \sqrt{x} + 1 \quad \text{6-billet} \quad 2\sqrt{x} - \sqrt{2x} = 2\sqrt{x} - 4$$

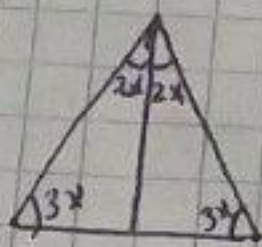
$$\sqrt{2x} = 4$$

$$2x = 16$$

$$x = 8$$

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

\textcircled{4}



$$2x + 3x = 90^\circ$$

$$5x = 90^\circ$$

$$x = 18^\circ$$

$$2x = 36^\circ$$

$$7:32^\circ$$

$$\textcircled{5} a = 4 \text{ dm}$$

$$l = 6 \text{ dm}$$

$$S_{\text{yon}} = \frac{1}{2} p \cdot l$$

$$p = 4a = 16$$

$$= \frac{1}{2} \cdot 16 \cdot 6 = 48 \text{ dm}^2$$

7-billet

$$\textcircled{1} \left(1 - \frac{1}{5^2}\right) \left(1 - \frac{1}{6^2}\right) \dots \left(1 - \frac{1}{14^2}\right) \cdot (x-1) = \frac{3}{7}$$

$$\left(1 - \frac{1}{2^2}\right) \left(1 - \frac{1}{3^2}\right) \left(1 - \frac{1}{4^2}\right) \left(1 - \frac{1}{5^2}\right) \dots \left(1 - \frac{1}{n^2}\right) = \frac{n+1}{2n}$$

$$\left(1 - \frac{1}{2^2}\right) \left(1 - \frac{1}{3^2}\right) \left(1 - \frac{1}{4^2}\right) = \frac{8}{4} \cdot \frac{8}{9} \cdot \frac{15}{16} = \frac{5}{8}$$

$$\frac{8}{5} \cdot \frac{n+1}{2n} (x-1) = \frac{3}{7}$$

$$\frac{8}{5} \cdot \frac{15}{28} (x-1) = \frac{3}{7}$$

$$\frac{6}{7} (x-1) = \frac{3}{7}$$

$$x-1 = \frac{3}{7} \cdot \frac{7}{6}$$

$$x-1 = \frac{1}{2}$$

$$x = 1,5$$

2).  $\sin x + \cos x = 0,5$  b-sa,  $16(\sin^3 x + \cos^3 x) = ?$

$$(\sin x + \cos x)^2 = 0,5^2$$

$$\sin^2 x + 2 \sin x \cos x + \cos^2 x = 0,25$$

$$1 + 2 \sin x \cos x = 0,25$$

$$2 \sin x \cos x = -0,75$$

$$\sin x \cos x = -0,375$$

$$16(\sin^3 x + \cos^3 x) = 16(\sin x + \cos x)(\sin^2 x - \sin x \cos x + \cos^2 x) =$$

$$= 16 \cdot 0,5 (1 - 0,375) = 8 \cdot 0,625 = 5$$

\textcircled{4}  $a = 10 \text{ sm}$

$$r = \frac{a}{2} = 5$$

$$S = \pi r^2 = 25\pi$$

5)  $S_{\pm} = 96 \text{ dm}^2$

$$6a^2 = 96$$

$$a^2 = 16$$

$$a = 4$$

$$V = a^3 = 64$$

3)  $\begin{cases} x = 17t^2 + 1 \\ y = 13t \end{cases}$

$$\begin{cases} t = \sqrt{\frac{x-1}{17}} \\ t = \frac{y}{13} \end{cases}$$

$$\frac{y}{13} = \sqrt{\frac{x-1}{17}}$$

$$y = \frac{13\sqrt{x-1}}{\sqrt{17}}$$



## 8 - bilet

1) Agar  $a + \frac{1}{a} = 2.5$  bo'sa  $\frac{a^4 - a^2}{3a} = ?$

$$a^2 - 2.5a + 1 = 0$$

$$a_1 = \frac{1}{2} \quad a_2 = 2$$

$$\frac{a^4 - a^2}{3a} = \frac{a^2(a^2 - 1)}{3a} = \frac{(a-1)a(a+1)}{3}$$

$$a = \frac{1}{2} \text{ bo'lganda } \frac{(\frac{1}{2}-1)\frac{1}{2}(\frac{1}{2}+1)}{3} = -\frac{\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{3}{2}}{3} = -\frac{1}{6}$$

$$a = 2 \text{ bo'lganda } \frac{(1-2)2(1+2)}{3} = -2 \quad \text{J: } -\frac{1}{6} \text{ va } 2$$

2)  $(x^2 + 14x + 14)(x^2 + x + 14) = 14x^2$

$$ax^4 + bx^3 + cx^2 + dx + e = 0 \text{ tenglamaning ildiz/i } x_1, x_2, x_3, x_4$$

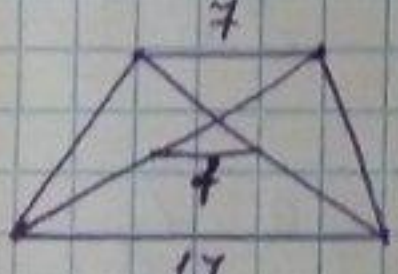
bo'lsin, u holda  $x_1 + x_2 + x_3 + x_4 = -\frac{b}{a}$  bo'ladi.

$$x^4 + x^3 + 14x^2 + 14x^3 + 14x^2 + 196x + 14x^2 + 14x + 196 = 14x^2$$

$$x^4 + 15x^3 + 28x^2 + 210x + 196 = 0$$

$$x_1 + x_2 + x_3 + x_4 = -15 \quad \text{J: } -15$$

3)  $\text{tg } 105^\circ = \text{tg}(60^\circ + 45^\circ) = \frac{\text{tg } 60^\circ + \text{tg } 45^\circ}{1 - \text{tg } 60^\circ \text{tg } 45^\circ} = \frac{\sqrt{3} + 1}{1 - \sqrt{3}}$

4)   $a = 17 \quad b = 7$   
 $f = \frac{a-b}{2} = \frac{17-7}{2} = 5$

5)  $S_{\text{yoni}} = 60\pi \quad S_t = 96\pi \quad S_{\text{yoni}} = \pi Rl \quad S_t = \pi Rl + \pi R^2$

$$60\pi + \pi R^2 = 96\pi \quad \pi R^2 = 36\pi \quad R^2 = 36 \quad R = 6$$

$$\pi Rl = 60\pi \quad 6\pi l = 60\pi \quad l = 10$$

## 9 - bilet

1)  $\sqrt{x+18} < 2-x$  aniq 5.  $\begin{cases} x+18 > 0 \\ 2-x \geq 0 \end{cases} \Rightarrow \begin{cases} x > -18 \\ x \leq 2 \end{cases} \Rightarrow$

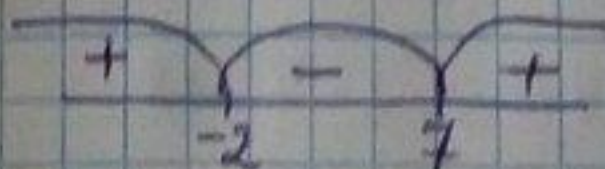
$$x \in [-18, 2]$$

$$x+18 < 4-4x+x^2$$

$$x^2 - 5x - 14 > 0$$

$$x_1 = 7 \quad x_2 = -2$$

$$x^2 - 5x - 14 < 0$$



$$\text{J: } [-18, -2)$$



2)  $C=4500, n=3, I=900 \quad z=?$

$$I = \frac{Czn}{100} \quad 900 = \frac{4500 \cdot 3 \cdot z}{100}$$

$$z = 6,666... \% \approx 6\%$$

3)  $5 \tan^2 x - 4 \tan x - 1 = 0$

$\tan x = t$  deň bel-2.

$\tan x = 1$

$\tan x = -\frac{1}{5}$

$$5t^2 - 4t - 1 = 0$$

$$D = 16 + 20 = 36$$

$$t_1 = \frac{4+6}{10} = 1$$

$$t_2 = \frac{4-6}{10} = -\frac{1}{5}$$

$$x_1 = \arctan 1 + \pi n = \frac{\pi}{4} + \pi n$$

$$x_2 = \arctan\left(-\frac{1}{5}\right) = -\arctan \frac{1}{5} + \pi n$$

4)  $A(5; 1)$  va  $B(-2; 3)$  vektorlar berilgan.  $|a+b| = ?$

$$\vec{a} + \vec{b} = (5-2; 1+3) = (3; 4)$$

$$|a+b| = \sqrt{3^2 + 4^2} = \sqrt{25} = 5$$

5)  $a=5 \quad S_2 = ? \quad S_2 = 6a^2 = 6 \cdot 5^2 = 6 \cdot 25 = 150$

10 - bilet.

1)  $\frac{\sqrt{2+\sqrt{3}}}{\sqrt{2-\sqrt{3}}} + \frac{\sqrt{2-\sqrt{3}}}{\sqrt{2+\sqrt{3}}} = \frac{(\sqrt{2+\sqrt{3}})^2 + (\sqrt{2-\sqrt{3}})^2}{\sqrt{2-\sqrt{3}} \cdot \sqrt{2+\sqrt{3}}} = \frac{2+\sqrt{3} + 2-\sqrt{3}}{\sqrt{4-3}} = 4$

2)  $f(x) = 5x + 7$   $f$ -yaga teskoveri  $f$ -yani toping.

$$y = 5x + 7$$

$$5x = y - 7$$

$$x = \frac{y-7}{5}$$

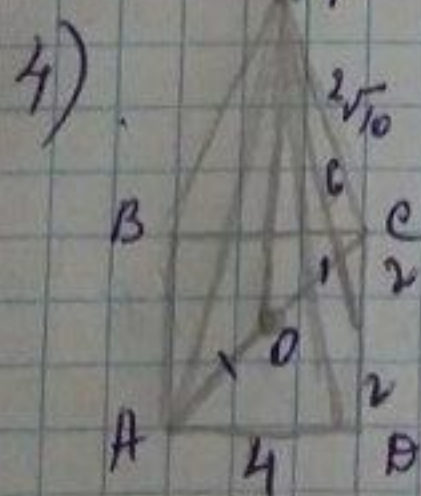
$$y = \frac{x-7}{5}$$

$f^{-1}(x) = \frac{x-7}{5}$

3) Agar  $\frac{\pi}{2} < \alpha < \pi$  va  $\sin \alpha = \frac{3}{5}$  bo'sa  $\tan \alpha = ?$

$$\cos \alpha = -\sqrt{1 - \sin^2 \alpha} = -\sqrt{1 - \frac{9}{25}} = -\sqrt{\frac{16}{25}} = -\frac{4}{5}$$

$$\tan \alpha = \frac{\sin \alpha}{\cos \alpha} = \frac{\frac{3}{5}}{-\frac{4}{5}} = -\frac{3}{4}$$



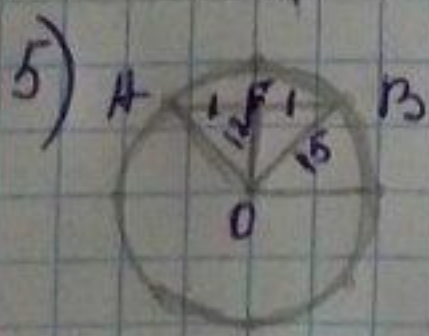
$$AB = \sqrt{4^2 + 4^2} = \sqrt{32} = 4\sqrt{2}$$

$$OC = 4\sqrt{2} : 2 = 2\sqrt{2}$$

$$FO = \sqrt{(2\sqrt{10})^2 - (2\sqrt{2})^2} =$$

$$= \sqrt{40 - 8} = \sqrt{32} = 4\sqrt{2}$$

$$S = \frac{1}{2} \cdot 4\sqrt{2} \cdot 4\sqrt{2} = 16$$



$$OF = \sqrt{15^2 - 12^2} = \sqrt{225 - 144} = \sqrt{81} = 9$$

$$AB = 2 \cdot 9 = 18$$