

16. Hisoblang:

$$\sqrt{16-2\sqrt{35}} - \sqrt{35} + 4$$

$$\sqrt{(\sqrt{35}-1)^2} - \sqrt{35} + 4$$

$$\sqrt{35}-1 - \sqrt{35} + 4 = 3$$

17. Hisoblang:

$$(x-3)! - (3-x)! \cdot x!$$

$$x-3 \geq 0 \quad 3-x \geq 0$$

$$x \geq 3 \quad x \leq 3$$

Demak $x=3$

$$(0! - 0!) \cdot 3! = 0$$

18. Tengsizlikni yeching:

$$|x^2-3x+4| \leq |x^2-2x+1|$$

$$(x^2-2x+4+x^2-3x) \cdot (x^2-3x+4-x^2+2x-1) \leq 0$$

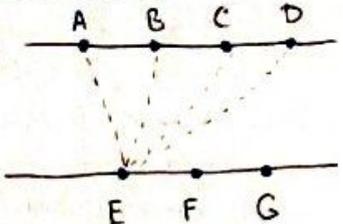
$$4(2x^2-6x+4) \leq 0$$

$$x^2-3x+2 \leq 0$$

$$(x-2)(x-1) \leq 0$$

$x \in [1; 2]$

19.



Nechta Δ -burchak
ya sash mumkin?

E nuqtani olaylik undan

A, B, C lar ga kesma

ka zar mi?

F va G lar dan han
sa tada hosil boladi:

Umumi y = 10 + 10 + 10 = 30 ta

20. Temirning 72% kesib olindi,
qolgan qismini ogirligi 54,2 kg.

Temirning kesib olingan qismini
ogirligini toping?

Yechish. temirni ogirligi M deylik

72% $\rightarrow \frac{72M}{100}$

Dolgani $\rightarrow \frac{28M}{100} = 54,2 \Rightarrow M = \frac{54,2 \cdot 100}{28}$

$\frac{72}{100} M = \frac{72}{100} \cdot \frac{54,2 \cdot 100}{28} = \frac{975,6}{7}$

21. $\left| \frac{0-3x}{1+3x} \right| > 0$

Modul da doimo
musbat son chiqadi
Demak $x \neq 2, x \neq -\frac{1}{3}$

$(-\infty; -\frac{1}{3}) \cup (-\frac{1}{3}; 2) \cup (2; \infty)$

22. Hisoblang:

2,6 · 7,7 + 2,6 · 3,8 + 2,4 · 16,2 - 4,7 · 2,4

2,6(7,7+3,8) + 2,4(16,2-4,7) =

= 2,6 · 11,5 + 2,4 · 11,5 =

= 11,5(2,6+2,4) = 5 · 11,5 =

= 57,5

23. $\begin{cases} a+b+c=3 \\ ab+bc+ca=2 \end{cases}$ bolsa

$a^3+b^3+c^3-3abc = ?$

$(a+b+c)^3 = 3^3 =$

$= (a+b)^3 + 3(a+b)^2c + 3c^2(a+b) + c^3 =$

$= a^3+b^3+c^3 + 3a^2b+3ab^2+3a^2c+3ac^2+3ab^2+3b^2a+3a^2c+3ca^2+3b^2c+3c^2b = 27-3abc$

$a^3+b^3+c^3+3ab(a+b)+3ac(a+c)+3bc(b+c)+3abc = 27$

$a^3+b^3+c^3+3ab(3-c)+3ac(3-b)+3bc(3-a)+3abc = 27$

$a^3+b^3+c^3+9(ab+bc+ca)-3abc = 27$

$a^3+b^3+c^3-3abc = 9$

24. $f(x) = \log_2 x^3 + 5b - x$ bolsa

$f(1) + f(x) = -f(\frac{1}{x})$ tenglamani
yeching

$f(x) = 6 + 5b - 4 = 2 + 5b$

$f(\frac{1}{x}) = -\log_2 x + 5b - \frac{1}{x}$

$2 + 5b + \log_2 x + 5b = -\log_2 x + 5b - \frac{1}{x} + x$

$x + \frac{1}{x} - 9b - 2 = 0$

$x^2 - (9b+2)x + 1 = 0$

$D = \pm \sqrt{(9b+2)^2 - 4}$

$x_{1,2} = \frac{9b+2 \pm \sqrt{(9b+2)^2 - 4}}{2}$

25. $\frac{27}{13} + \frac{77}{19} - \frac{93}{23} = A$

Qaysi ora liqda joylashgan

$2 + \frac{1}{13} + 4 + \frac{1}{19} - 4 - \frac{1}{23} =$

$2 + \frac{1}{13} + \frac{1}{19} - \frac{1}{23} = 2, -$

$2 < A < 3$

26. $A = \{(x,y) | x^2+y^2=4, x,y \in R\}$

$B = \{(x,y) | x+y=2, x,y \in R\}$

bolsa $A \cap B = ?$

$x^2+y^2=4 \quad y=2-x$

$x^2+(2-x)^2=4 \quad x_1=0, x_2=2$

$(0; 2) \cup (2; 0)$

27. $\begin{cases} b_1-b_2=112 \\ b_5-b_2=56 \end{cases}$ $b_1+b_5 = ?$

$b_1 \cdot q^4 - b_1 \cdot q^2 = 112 \Rightarrow b_1 q^2 (q^2-1) = 112$

$b_1 \cdot q^4 - b_1 \cdot q = 56 \Rightarrow b_1 q (q^3-1) = 56$

$\frac{b_1 \cdot q^2 (q^2-1)}{b_1 \cdot q (q^3-1)} = 2 \Rightarrow q=2, b_1=2$

$b_1+b_5 = b_1(1+q^4) = 2 \cdot 17 = 34$

28. $7 \cdot 17^5$ sonini 8 ga
bolgan dagi qoldiqni toping.

$\frac{7(16+1)^5}{8} \Rightarrow \frac{7}{8} \quad r=7$

29. $(x-1)(x+1)(x^2+1)(x^4+1) =$

$= (x^2-1)(x^2+1)(x^4+1) =$

$= (x^4-1)(x^4+1) = x^8-1$

30. n ning qanday butun
qiymat larida $\frac{n^3+3n-20}{2n}$ ifoda
butun son boladi

$\frac{n^3+3n-20}{2n} = \frac{n^2}{2} + \frac{3}{2} - \frac{20}{2n} = n - \frac{17}{2n}$

$n=5 \Rightarrow 5 - \frac{17}{10} = 1,5$

Demak $n=1, 5$ bolganda

31. $\int x^2 \cdot \sin x \, dx = -\int x^2 d(\cos x) =$

$= -x^2 \cos x + \int \cos x d(x^2) =$

$= -x^2 \cos x + 2 \int x \cos x \, dx =$

$= -x^2 \cos x + 2 \int x d(\sin x) =$

$= -x^2 \cos x + 2x \sin x + 2 \cos x + C$

32. $\sqrt{5} = a; \sqrt{1,8} = ?$

$a^2 = 5$

$2a^2 = 10$

$5 - 2 = \frac{3}{2}$

$\sqrt{10 - \frac{3}{2}} =$

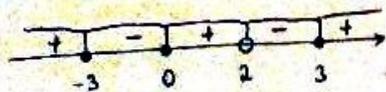
@rasmiydtm_yangli

liklar

matematika09

1. $\frac{x^3}{x-2} \leq \frac{9x}{x-2}$ tengsizlikni yeching

$$\frac{x(x^2-9)}{x-2} \leq 0 \Rightarrow \frac{x(x-3)(x+3)}{x-2} \leq 0$$



Javob: $[-3; 0] \cup (2; 3]$

2. Tenglamani yeching

$$(\sqrt{2})^{2x-2} = (\sqrt{2})^{\frac{2x}{3}}$$

$$2^{\frac{2x-2}{2}} = 2^{-\frac{x}{3}}$$

$$\frac{2x-2}{2} = -\frac{x}{3} \Rightarrow 6x-3 = -2x$$

$$8x = 3 \Rightarrow x = \frac{3}{8}$$

Javob: $x = \frac{3}{8}$

3. 1) $\int x \cdot \sin 3x \, dx$

2) $\int x \cdot \cos 2x \, dx$

Bolalrab integrallashdan:

1) $\int x \, d(-\frac{1}{3} \cos 3x) =$

$$= -\frac{x}{3} \cdot \cos 3x + \frac{1}{3} \int \cos 3x \, dx =$$

$$= \boxed{-\frac{x}{3} \cos 3x + \frac{1}{9} \sin 3x + C}$$

2) $\int x \cdot \cos 2x \, dx = \int x \, d(\frac{1}{2} \sin 2x) =$

$$= \frac{x}{2} \cdot \sin 2x + \frac{1}{2} \int \sin 2x \, dx =$$

$$= \boxed{\frac{x}{2} \cdot \sin 2x - \frac{1}{4} \cos 2x + C}$$

4. Kopyaturchilarga ajratin

$$(a-b)^2 = c^2 =$$

$$= \boxed{(a-b+c)(a-b-c)}$$

5. Ifodaning eng kichik qiymatini toping

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

Koshi - Bunyakoviski ydan:

$$\sqrt{(x-3)^2 + (y+4)^2} + \sqrt{x^2 + y^2} \geq$$

$$\geq \sqrt{(x-3-x)^2 + (y+4-y)^2}$$

$$\sqrt{(x-3-x)^2 + (y+4-y)^2} \geq 5$$

Demak, 5 ekan

Javob: $\boxed{5}$

6. Soddaleshtiring:

$$\frac{(x+3)!}{(x+4)!} + \frac{(x+3)!}{(x-2)!}$$

$$\frac{(x+3)!(x)(x-1)(x-2)(x-3) \dots}{(x+4)!} + \frac{(x+3)!}{(x-2)!}$$

$$+ \frac{(x+3)x(x-1)(x-2)!}{(x-2)!} =$$

$$= x(x+3)(x-1)(x^2-5x+6+1) =$$

$$= \boxed{x(x+3)(x-1)(x^2-5x+7)}$$

7. Tengsizlikni yeching:

$$\sqrt[3]{50 \lg x} < 100x$$

$$30 \lg x < 100x \quad / \lg$$

$$3 \lg x < \lg(100x)$$

$$\lg x < 2 \Rightarrow x < 100^2$$

A.S $x > 0$

J: $\boxed{0 < x < 100^2}$

8. Tenglamani yeching:

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

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

$$t + \frac{1}{t} = 4 \Rightarrow t^2 - 4t + 1 = 0$$

$$t = 2 \pm \sqrt{3}$$

$$t_1 = 2 + \sqrt{3}; t_2 = 2 - \sqrt{3}$$

$$(2+\sqrt{3})^{x^2} = (2+\sqrt{3})^1$$

$$x^2 = 1 \Rightarrow x = \pm 1$$

$$(2+\sqrt{3})^{x^2} = \frac{1}{2+\sqrt{3}}$$

$$x^2 = 1 \quad \emptyset$$

Demak, $\boxed{x = \pm 1}$

9. $y = kx^2 - 3$ funksiya

$(-2; 9)$ nuqtadan

otsa $k = ?$

$$9 = 4k^2 - 3$$

$$\boxed{k = 3}$$

10. Tenglamani yeching

$$\sin 5x = \sin x$$

$$\sin 5x - \sin x = 2 \cos \frac{3x}{2} \cdot \sin \frac{x}{2} = 0$$

$$\cos \frac{3x}{2} = 0 \quad \sin \frac{x}{2} = 0$$

$$\frac{3x}{2} = \frac{\pi}{2} + \pi n \quad \frac{x}{2} = \pi n$$

$$x_1 = \frac{\pi}{3} + \frac{2\pi n}{3} \quad x_2 = 2\pi n$$

11. $x^2 - 5x + 5 = 0$

x_1, x_2, x_3 toping
kopyaturchilar ga
ajratib olamiz:

$$x^2 - 5x + 5 = 0$$

$$x(x-5) - 5(x-1) = 0$$

$$(x-1)(x^2+x-5) = 0$$

$$x_1 = 1 \quad x^2+x-5 = 0$$

$$D = 1 + 20 = 21$$

$$x_2 = \frac{-1 + \sqrt{21}}{2}; x_3 = \frac{-1 - \sqrt{21}}{2}$$

Javob: $x_1 = 1, x_2, x_3 = \frac{-1 \pm \sqrt{21}}{2}$

12. Tenglamani yeching

$$\sin x = \sin 3x$$

$$\sin 3x - \sin x = 0$$

$$2 \cos 2x \cdot \sin x = 0$$

$$\cos 2x = 0 \quad \sin x = 0$$

$$2x = \frac{\pi}{2} + \pi n \quad x = \pi n$$

$$\boxed{x_1 = \frac{\pi}{4} + \frac{\pi n}{2} \quad x_2 = \pi n}$$

13. Agar $\vec{a}(x, 2)$ va

$\vec{b}(-5, y)$ vektorlar

kolle near bo'lsa

$$x + y = ?$$

kolle near = parallel

$$-\frac{x}{-5} = \frac{2}{y} \Rightarrow xy = -10$$

$$2xy + 35 = -20 + 35 = \boxed{-5}$$

14. $f(x) = \arcsin(3-2x)$

$f^{-1}(x) = ?$ toping

$(f^{-1}(x) - f(x))$ ga

teskari funksiya

x va $f(x)$ lar ni

ornini almashtiramiz:

$$x = \arcsin(3-2f^{-1}(x))$$

$$3-2f^{-1}(x) = \sin x$$

$$f^{-1}(x) = \boxed{\frac{3}{2} - \frac{1}{2} \sin x}$$

15. $2x^2 - 3x - 9x^2 + \frac{a^2}{3} = 0$

3 ta ildiz qaram-qarshi va 3 ta ildiz bor bo'lsa $a^2 + 3 = ?$ $x_1 = -x_2$

$$x_1 + x_2 + x_3 = 2 \Rightarrow x_3 = 2$$

$$2 \cdot 2^2 - 3 \cdot 2 - 9 \cdot 2 + 12 = 0$$

$$a = 6 \quad \boxed{a^2 + 3 = 39}$$

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