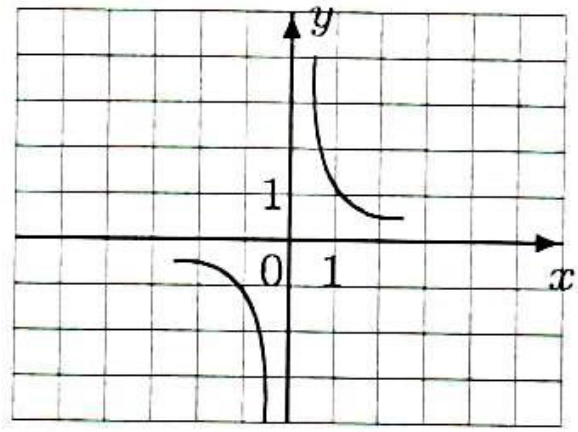
25-Mavzu. Funksiyalar

1. Chizmada qaysi funksiya grafigi taqriban tasvirlangan?



A) $y = x^{-4}$ B) $y = x^{-3}$ C) $y = x^3$ D) $y = x^{-2}$

2. $f(x) = 3x + 8$ funksiyaga teskari funksiyani toping.
A) $g(x) = \frac{x-3}{8}$ B) $g(x) = \frac{3-x}{8}$ C) $g(x) = \frac{8+x}{3}$ D) $g(x) = \frac{x-8}{3}$

3. $y = \frac{2x-3}{5x+4}$ funksiyaga teskari bo‘lgan funksiyani toping.
A) $y = \frac{4x+3}{5x-4}$ B) $y = \frac{5x+4}{2x-3}$ C) $y = \frac{2x+3}{5x-4}$ D) $y = \frac{4x+3}{2-5x}$

4. $y = \frac{2x-3}{3x-2}$ funksiyaga teskari bo‘lgan funksiyani toping.
A) $y = \frac{2x-3}{3x-2}$ B) $y = \frac{2x+3}{3x+2}$ C) $y = \frac{3x-2}{2x-3}$ D) $y = \frac{4x-3}{2x-3}$

5. $y = x^2 - 6x + 10$ funksiyaga $[3;\infty)$ oraliqdadi teskari funksiyani toping.
A) $y = 3 - \sqrt{x-1}$ B) $y = 3 + \sqrt{x-1}$
C) $y = 3 \pm \sqrt{x-1}$ D) $y = 3 + \sqrt{x+1}$

6. Quyidagi nuqtalardan qaysi biri $y = \frac{x^2-3x-10}{x^2-5x-14}$ funksiyaga teskari funksiyaning grafigiga tegishli emas?
A) $(3;8)$ B) $(-1;6)$ C) $(5;0)$ D) $(2;9)$

7. $y = \frac{3x+1}{x+2}$ funksiyaning qiymatlar to‘plamini toping.
A) $\left[-2;-\frac{1}{3}\right]$ B) $(-\infty;3) \cup (3;\infty)$ C) $\left(-\infty;-\frac{1}{3}\right)$ D) $(-\infty;-2)$

8. $y = f(x)$ funksiyaning aniqlanish sohasi [0;2] va qiymatlar sohasi [0;1] bo‘lsa, $g(x) = 1 - f(x+1)$ funksiyaning aniqlanish va qiymatlar sohasi qanday?
A) [–1;1],[0;1] B) [1;3],[0;1] C) [–1;1],[–1;0] D) [0;2],[–1;0]

9. Agar $f(x)$ funksiya uchun $f(x+1) = 2f(x) - 2012$ va $f(2015)=2018$ bo‘lsa, $f(2014)$ ni toping.
A) 2014 B) 2015 C) 2018 D) 2016

10. $f(2x-1) = \frac{x+2}{x-3}$ bo‘lsa, $f(x) = ?$
A) $\frac{x+5}{x-5}$ B) $\frac{x-5}{x+5}$ C) $\frac{2x+5}{x-5}$ D) $\frac{x+5}{2x-5}$

11. Agar $f(x+2) = x^2 + x + 10$ bo‘lsa, $f(x) = ?$
A) $x^2 - 3x + 10$ B) $x^2 - 3x + 12$ C) $x^2 - 3x + 8$ D) $x^2 - 3x + 11$

12. $f(x) = \frac{x-1}{x}$ berilgan. $f(f(x)) \geq 0$ tengsizlikni yeching.
A) $(-\infty; 1]$ B) $(-\infty; -1]$ C) $(-\infty; 0) \cup (0; 1]$ D) $(-\infty; 0) \cup (0; 1)$

13. $f(x) = \frac{1}{x-1}$ funksiya berilgan $f(f(x)) \geq 0$ tengsizlik nechta butun yechimga ega?
A) 1 ta B) 2 ta C) 3 ta D) Ø

14. Agar $(x+3)f(x+3) + f(6+x) = 2f(2x+9) + 4x$ bo‘lsa, $f(3)$ ni toping.
A) 6 B) 12 C) 17 D) 9

15. $f\left(\frac{3x-1}{2x+1}\right) = x + x^2 + x^3 + \ldots + x^{99}$ bo‘lsa, $f(1)$ ni aniqlang.
A) $2^{99} - 2$ B) $2^{100} - 2$ C) $2^{100} + 1$ D) $2^{100} - 1$

16. $f(x) = \frac{x+1}{x-1}$ va $g(x) = \frac{x-1}{x+1}$ funksiyalar berilgan $f(g(2))$ ni toping.
A) 1 B) 2 C) –2 D) –1

17. $f(x) = 3x - 2$, $\phi(x) = 5x + 3$ funksiyalar berilgan. $f(\phi(x)) + \phi(f(x)) = 0$ tenglamani yeching.
A) $x=0$ B) $x = \frac{1}{2}$ C) $x=1$ D) Ø

18. $f(x) = \frac{x+1}{x-1}$ va $\phi(x) = \frac{x-1}{x+1}$ funksiyalar berilgan $f(\phi(x)) + \phi(f(x)) = 0$ tenglamani yeching.
A) 1 B) – 1 C) ± 1 D) Ø

19. Agar $f(x+1)=x^2-3x+5$ bo‘lsa, $f(x)$ ni toping.
A) x^2-5x+7 B) x^2+5x-9 C) x^2-5x+9 D) x^2+5x-6

20. Agar $f(x+1)=x^2-6x+5$ bo‘lsa, $f(x)$ ni toping.
A) $x^2-8x+12$ B) $x^2+8x+12$ C) $x^2-8x-12$ D) $x^2-9x+13$

21. Agar $f(x-2)=x^2-4x+3$ bo‘lsa, $f(2-x)$ ni aniqlang.
A) x^2+4x-3 B) x^2-4x-3 C) x^2-4x+3 D) x^2+4x+3

22. Agar $f\left(\frac{x+1}{x-2}\right)=\frac{3x-1}{x+4}$ bo‘lsa, $f(x)$ ni aniqlang.
A) $\frac{5x-3}{6x+4}$ B) $\frac{5x+4}{6x-3}$ C) $\frac{3x+1}{2x-4}$ D) $\frac{5x-4}{6x+3}$

23. Agar $f\left(\frac{x-2}{x+3}\right)=\frac{5x-1}{2x+3}$ bo‘lsa, $f(x)$ ni toping.
A) $\frac{16x+9}{3x+7}$ B) $\frac{16x-9}{3x-7}$ C) $\frac{16x+9}{3x-7}$ D) $\frac{16x-9}{3x+7}$

24. $f(x)+2f\left(\frac{1}{x}\right)=x$ $(x\neq 0)$ berilgan. $f(x)$ ni toping.
A) $\frac{2}{3x}+\frac{x}{3}$ B) $\frac{2}{3x}-\frac{x}{3}$ C) $\frac{2}{x}+\frac{x}{3}$ D) $\frac{2}{5x}-\frac{x}{4}$

25. $(x-1)f(x)+f\left(\frac{1}{x}\right)=\frac{1}{x-1}$ $(x\neq 0;1)$ berilgan. $f(x)$ ni toping.
A) $\frac{1}{x-1}$ B) $\frac{1}{x+1}$ C) $\frac{1}{1-x}$ D) $\frac{x-1}{x+1}$

26. $2f(x)+3f\left(\frac{1}{x}\right)=x^2$ $(x\neq 0)$ berilgan. $f(x)$ ni toping.
A) $\frac{3}{5x^2}+\frac{2}{5x}$ B) $\frac{3}{5x^2}-\frac{2}{5}x^2$ C) $\frac{2}{5x^2}+\frac{3}{4}x^2$ D) $\frac{4}{5x^2}-\frac{1}{x^3}$

27. $f\left(\frac{x+1}{x-2}\right)+2f\left(\frac{x-2}{x+1}\right)=x$ $(x\neq -1;1)$ bo‘lsa, $f(x)$ ni toping.
A) $\frac{4x+5}{3-3x}$ B) $\frac{4x-5}{3+x}$ C) $\frac{2x-4}{5x-3}$ D) $\frac{4x-1}{3-2x}$

28. $f(x)=\begin{cases}x^2+4x+5, & |x|>2\\ x^2+4x-5, & |x|\leq 2\end{cases}$ funksiya berilgan $f\left(\sqrt{11}-2\right)$ ni toping.
A) 1 B) 2 C) 3 D) 4

29. A(2;6), B(2;8), C$\left(\frac{1}{2};\frac{3}{4}\right)$, D(–1;–1) nuqtalardan qaysi biri *y=f(x)* funksiya grafigiga tegishli?

$$f(x)=\begin{cases}-\frac{3}{x}, -3\le x<0;\\ 3x^2, 0\le x<1;\\ 3x-1, x\ge 1.\end{cases}$$

A) A nuqta B) B nuqta C) C nuqta D) D nuqta

30. $f(x)=\begin{cases}x+1, & x<-2\\ x^2+4x, & -2\le x<3\\ 2x+3, & x\ge 3\end{cases}$ funksiya berilgan bo‘lsa, $f(-4)+f(2)+f(5)$ ni hisoblang.

A) 20 B) 22 C) 24 D) 26

31. Agar $f(x)=\begin{cases}|x+1|, x>-2\\ 3-4|x|, x\le -2\end{cases}$ bo‘lsa, $f(0)-f\left(-\frac{9}{4}\right)$ ni hisoblang.

A) 7 B) 10 C) 1 D) 5

32. Ushbu $f(x)=2x^2-5x-3$ funksiyaning nollarini toping.

A) $-3;0$ B) $-3;\frac{1}{2}$ C) $-\frac{1}{2};3$ D) $-1;6$

33. $y=4x^2-7x+3$ funksiyaning nollarini toping.

A) nollari yo‘q B) –1 va 0 C) 1 va $\frac{3}{4}$ D) –1 va $\frac{4}{3}$

34. $y=-2x^2+8x-15$ parabolaning uchini koordinatalarini toping.

A) (2;–7) B) (2;19) C) (–2;–11) D) (–2;–7)

35. $y=14-12x+x^2$ parabolaning simmetriya o‘qini ko‘rsating.

A) $y=6$ B) $x=-6$ C) $x=6$ D) $x=14$

36. k ning qanday qiymatlarida $y=kx^2-3$ funksiya grafigi (1; 5) nuqtadan o‘tadi?

A) 22 B) 4 C) 8 D) 12

37. $y=3+3(x-2)^2$ funksiya grafigi koordinata tekisligining qaysi choraklaridan o‘tadi?

A) I, II va IV B) I, II va III C) barchasidan D) I va II

38. $y=2015x^2+2014x-2$ funksiya grafigi qaysi choraklardan o‘tadi?

A) I,II,IV B) I,II,III C) II,IV D) I,II,III,IV

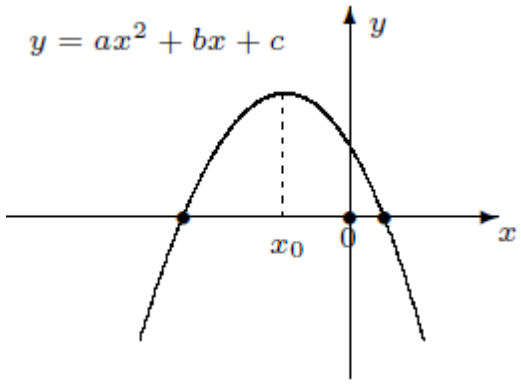
39. $y = x^2 - 6x + 11$ funksiyaning eng kichik qiymatini toping.
A) -4 B) 2 C) 1 D) 3

40. a ning qanday qiymatida $y = ax^2 + 6x - 15$ funksiya $x = -7{,}5$ nuqtada eng kichik qiymatga ega bo‘ladi?
A) 0 B) 0,4 C) 2,5 D) –2,5

41. $y = 3x^{10} - 4x^5 + 1$ funksiyaning eng kichik qiymatini toping.
A) $\frac{1}{3}$ B) $-\frac{1}{3}$ C) $\frac{1}{9}$ D) $-\frac{1}{9}$

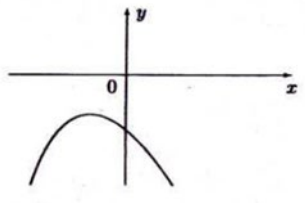
42. Agar $a < 0$ va $b^2 - 4ac < 0$ bo‘lsa, $y = ax^2 + bx + c$ parabola koordinatalar tekisligining qaysi choraklarida joylashgan.
A) I, II B) III, IV C) II, III D) I, II va IV

43. $y = ax^2 + bx + c$ funksiya grafigi quyidagi chizmada berilgan. Har doim to‘g‘ri bo‘ladigan tasdiqni ko‘rsating. $(D = b^2 - 4ac)$



A) $x_0 ab - cD > 0$ B) $c^2 - bD > 0$ C) $\frac{b}{c} + \frac{ac}{D} > 0$ D) $\frac{a}{b} + \frac{c}{D} < 0$

44. $y = ax^2 + bx + c$ funksiya grafigi quyidagi chizmada berilgan. To‘g‘ri tasdiqni ko‘rsating. $(D = b^2 - 4ac)$

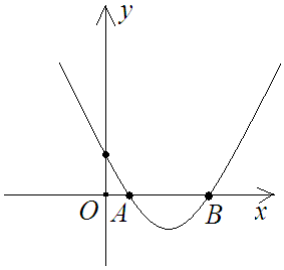


A) $a \cdot D < 0$ B) $b \cdot c > 0$ C) $a \cdot b < 0$ D) $b > 0$

45. a ning qanday eng kata butun qiymatida $3x^2 - 18x - 3 > a$ tengsizlik x ning barcha qiymatlarida o‘rinli bo‘ladi?
A) -32 B) -31 C) -30 D) -29

46. A(2;2) B(0;3) va C(4;3) nuqtalardan o‘tuvchi parabola qaysi funksiyaning grafigi hisoblanadi?
A) $y = 2x^2 - 4x + 3$ B) $y = \frac{1}{4}x^2 - x + 3$
C) $y = \frac{1}{4}x^2 + 2x + 3$ D) $y = \frac{3}{4}x^2 + x + 3$

47. Rasmda $y = x^2 - 5x - 2m + 2$ finksiyaning grafigi parabola berilgan bo‘lib, uning uchun $OB - OA = 3$ bo‘lsa, m ning qiymati qanday?



A) –1 B) –2 C) –3 D) –4

48. $f(x) = \sqrt{-x^2 + 6x - 6}$ fnuksiyaning qiymatlar sohasini toping.

A) $(-\infty; 3]$ B) $[0; \sqrt{3}]$ C) $[\sqrt{3}; \infty)$ D) $[3; \infty)$

49. $A(-1;8)$, $B(0;-1)$, $C(2;11)$ nuqtalardan o‘tadigan parabola OX o‘qini qaysi nuqtada kesadi?

A) $(1;0); \left(\frac{1}{5};0\right)$ B) $(1;0); \left(-\frac{1}{5};0\right)$ C) $\left(\frac{1}{2};0\right); \left(\frac{1}{5};0\right)$ D) $\left(-\frac{1}{2};0\right); \left(\frac{1}{5};0\right)$

50. a ning qanday eng katta butun qiymatida $y = ax^2 - (2a + 1)x + a + 2$ parabola OX o‘qini 2 ta nuqtada kesadi?

A) 0 B) 1 C) –1 D) 2

51. $y = x^2 - (b + 2)x + b + 5$ parabola OX o‘qi bilan kesishmaydigan b ning nechta butun qiymati bor?

A) 9 B) 8 C) 7 D) 6

52. $f(x) = (a + 5)x^2 - (a + 8)x + a$ funksiya grafigi OX o‘qqa urinsa, a ning manfiy qiymatini toping.

A) $-4\frac{1}{4}$ B) $-6\frac{3}{5}$ C) $-3\frac{4}{7}$ D) $-5\frac{1}{3}$

53. c ning qanday qiymatlarida $f(x) = cx^2 + (2c - 5)x + c + 1$ parabola grafigi OX o‘qdan yuqorida yotadi?

A) $c > 1\frac{8}{15}$ B) $c > 1\frac{11}{20}$ C) $c > 1\frac{1}{24}$ D) $c > 1\frac{3}{5}$

54. k qanday qiymatlarida $f(x) = kx^2 + (k + 10)x - 1{,}25$ funksiya grafigi OX o‘qdan pastda bo‘ladi?

A) $(-\infty; -20) \cup (-5; 0)$ B) $(5; 20)$ C) $(-20; -5)$ D) $(-\infty; 5) \cup (20; \infty)$

55. c ning qanday qiymatlarida $(2c+1)x^2+3-c>0$ tengsizlik x ning ixtiyoriy qiymatida bajariladi?
A) $(-0{,}5;3)$ B) $(-\infty;-0{,}5)\cup(3;\infty)$ C) $(-3;0{,}5)$ D) $[-0{,}5;3)$

56. $(t+1)x^2-(2t-1)x+t+3<0$ tengsizlik x ning har qanday qiymatida o‘rinli bo’ladigan t ning nechta butun qiymati bor?
A) 1 ta B) 2 ta C) 3 ta D) birorta ham yo‘q

57. a ning qanday qiymatlarida $y=x^2-2a(x-a)-a-6$ parabola uchi 1-chorakda yotadi?
A) $a>0$ B) $a>1$ C) $a>2$ D) $a>3$

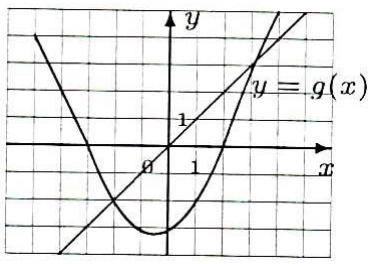
58. m qanday qiymatlarida $f(x)=-x^2+(m-1)x+2$ funksiya (1;2) oraliqda o‘sadi?
A) $[5;\infty)$ B) $[4;\infty)$ C) $[3;\infty)$ D) $[2;\infty)$

59. $f(x)=(a+1)x^2-(a+2)x+a+3$ parabola simmetriya o‘qi tenglamasi $x=5$ bo‘lsa, a ni toping.
A) $-\frac{9}{8}$ B) $-\frac{8}{9}$ C) $\frac{8}{9}$ D) $\frac{9}{8}$

60. $y=|x^2-5x+4|$ funksiya grafigi qaysi choraklarda yotadi?
A) I, II B) I, II, III C) I, II IV D) I, II, III, IV

61. a ning qanday qiymatida $y_1=|x^2-6x-55|$ va $y_2=a$ funksiyalar uchta umumiy nuqtaga ega bo‘ladi?
A) $a=64$ B) $a=-32$ C) $a=48$ D) $a=-36$

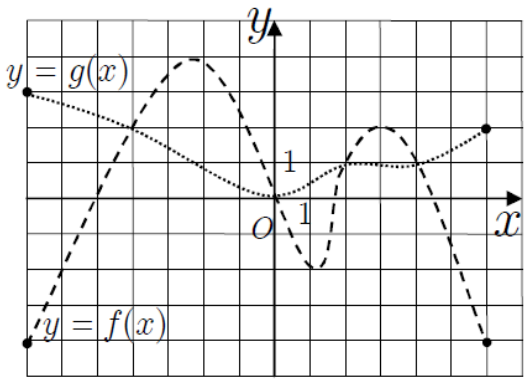
62. Chizmada $[-5;4]$ kesmada berilgan $y=g(x)$ funksiyaning grafigi tasvirlangan. $g(x)\geq x$ tengsizlikni qanoatlantiradigan x ning barcha qiymatlarini toping.



A) $[-4;-2]\cup[3;4]$ B) $[-5;-2]\cup[3;4]$
C) $[-5;-3]\cup[2;4]$ D) $[-2;3]$

63. Chizmada $[-7;6]$ kesmada berilgan $y=f(x)$ va $y=g(x)$ funksiyalarning grafiklari tasvirlangan. $g(x)>f(x)$ tengsizlikni qanoalantiradigan x ning barcha qiymatlarini toping.

_ _ _ _ _ _ $y=f(x)$; ..... $y=g(x)$



A) $(-4;4)$ B) $[-4;0]\cup[2;4]$ C) $(-4;0)\cup(2;4)$ D) $[-7;-4)\cup(0;2)\cup(4;6]$

64. $y=f(x)$ funksiya grafigi berilgan bo‘lib, uni parallel ko‘chirish yordamida $y=f(x-m)-n$ funksiya grafigi hosil qilingan. Bunday parallel ko‘chirishda koordinatalar boshi qanday nuqtaga ko‘chadi?

A) N(-m;-n) B) N(m;n) C) N(m;-n) D) N(-m;n)

Kalitlar

1.	B	16.	C	31.	A	46.	B	61.	A
2.	A	17.	A	32.	C	47.	A	62.	B
3.	D	18.	D	33.	C	48.	B	63.	D
4.	A	19.	C	34.	A	49.	B	64.	C
5.	B	20.	A	35.	C	50.	C		
6.	C	21.	C	36.	C	51.	C		
7.	B	22.	B	37.	D	52.	D		
8.	A	23.	A	38.	D	53.	C		
9.	B	24.	B	39.	B	54.	A		
10.	A	25.	C	40.	B	55.	D		
11.	B	26.	A	41.	B	56.	D		
12.	D	27.	B	42.	B	57.	D		
13.	D	28.	B	43.	A	58.	A		
14.	B	29.	C	44.	B	59.	B		
15.	C	30.	B	45.	B	60.	A		