



HARBIY 2017

VARIANT 1

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1. To'g'ri tenglikni aniqlang?

A) $\left(4\sin^2 \frac{7\pi}{9} + 4\sin^2 \frac{5\pi}{18} + 4\cos 4\left(\pi + \frac{\pi}{4}\right)\right)^0 = 1$

B) $\sqrt[3]{\log_2 \frac{1}{256}} = -2$

C) $\frac{4(x^2 - 4)}{5(x-2)} = \frac{4}{5}(x+2), x \in \mathbb{R}$

D) $((-5)^2)^{\frac{1}{2}} = -5$

2. ABCD parallelogrammda CD tomonni D uchidan boshlab hisoblaganda 2:3 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar AND uchburchakning yuzi 8 ga teng bo'lsa, parallelogrammning yuzini toping?

- A) $20\sqrt{2}$ B) 45 C) 20 D) 40

3. Bir gala chumchuqlar bittadan shoxga qo'nganda bitta chumchuq ortib qoladi, ikkitadan qo'nsa, bitta shox ortib qoladi. Nechta chumchuq va nechta shox bo'lgan?

- A) 3; 4 B) 6; 8 C) 8; 6 D) 4; 3

4. $x^2 + 100x + 6 = 0$ kvadrat tenglamaning haqiqiy yechimlari $x^2 + mx + n = 0$ tenglama haqiqiy yechimlarining kublariga teng. $m^3 - 3mn$ ning qiymatini toping?

- A) 50 B) 100 C) 81 D) 125

5. m, n natural sonlar. $m^2 = n^2 + 299$ tenglikni qanoatlantirsa m ni toping?

- A) 114 B) 112 C) 115 D) 110

6. $\operatorname{tg}^2\left(\arccos \frac{1}{5}\right) - 2$ hisoblang.

- A) 16 B) 22 C) 24 D) -24

7. ABC uchburchakning BC va AC tomonlarida mos ravishda D va E nuqtalar shunday olinganki bunda burchak $\angle BAD = 50^\circ$, burchak $\angle ABE = 30^\circ$. Agar burchak $\angle ABC = \angle ACB = 50^\circ$ bo'lsa, burchak $\angle BED$ ni toping?

- A) 40° B) 50° C) 70° D) 80°

8. $\int_0^1 \frac{2x}{x+1} dx$ integralni hisoblang?

- A) $\ln \frac{e}{2}$ B) $\ln 2e$ C) $2\ln \frac{e}{2}$ D) 1

9. Assoslarining radiuslari 3 va 6 ga teng bo'lgan kesik konus va unga tengdosh slindrning balandliklari bir xil. Slindr asosining radiusini toping?

- A) $\sqrt{19}$ B) $\sqrt{23}$ C) $\sqrt{21}$ D) $\sqrt{21\frac{1}{3}}$

10. To'g'ri javobni ko'rsating. Bu yerda [a] - a sonning butun qismi.

- A) Agar $a, b \in \mathbb{R}$ bo'lsa $[a+b] = [a] + [b]$
B) Agar $a, b \in \mathbb{Z}$ bo'lsa $[a+b] = [a] + [b]$

C) Agar $a, b \in \mathbb{Z}$ bo'lsa $[a+b] < [a] + [b]$

D) Agar $a, b \in \mathbb{Q}$ bo'lsa $[a+b] = [a] + [b]$

11. ABCD parallelogramm uchta uchining koordinatalari ma'lum bo'lsa, $A(0; -1)$, $B(1; 3)$, $C(6; 3)$ ABCD parallelogrammning yuzini toping?

- A) 5 B) 8 C) 10 D) 12

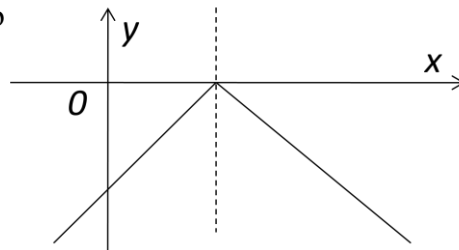
12. $\frac{7^x}{7^x - 6^x} < 7$ tengsizlikning eng katta butun manfiy va eng kichik butun musbat yechimlari ko'paytmasini toping?

- A) 2 B) -2 C) 4 D) 1

13. Dioganallari 90° burchak ostida kesishuvchi ABCD trapetsiyaning asoslari mos ravishda 3 va 5 ga teng. Dioganallarining kesishish nuqtasidan asoslariga parallel to'g'ri chiziq o'tkazilgan. Ushbu to'g'ri chiziqni yon tomonlar bilan chegaralangan kesmasi uzunligini toping?

- A) 4 B) 3 C) 3,25 D) 3,75

14. Rasmda $y = a \cdot \sqrt{(x-b)^2 + c} + d$ funksiya grafigi tasvirlangan. Quyidagi javoblardan qaysi biri doimo noto'g'ri?



- A) $\frac{bc}{a} \leq 0$ B) $a\sqrt{c} + d = 0$ C) $bc + a < 0$ D) $(b-a) \cdot c < 0$

15. Natural n sonning kvadrati 4 ga bo'linganda qanday qoldiqlarga ega bo'lishi mumkin?

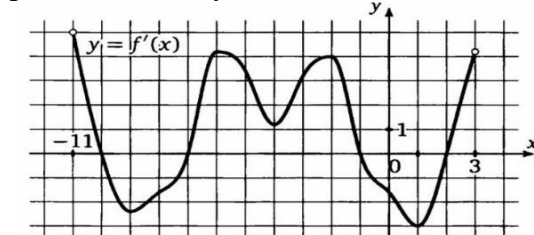
- A) 1; 2 B) 0; 1; 2 C) 0; 1 D) 0; 2

16. $a+b+c = -7$ va $\frac{1}{a+b} + \frac{1}{b+c} + \frac{1}{a+c} = 1$ bo'lsa,

$a+b+c - \left(\frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b}\right)$ ifoda qiymatini toping?

- A) 3 B) 6 C) b D) a, b, c ga bog'liq

17. Chizmada $(-11; 3)$ oraliqda aniqlangan $f(x)$ funksiya hosilasining grafigi tasvirlangan nechta nuqta $f(x)$ funksiya grafigiga urinma $y = 3x - 11$ to'g'ri chiziqqa parallel bo'ladi yoki u bilan ustma-ust tushadi?



- A) 4 B) 6 C) 3 D) 0

18. $2(x-3)^2 - (x-1)(x+3) \leq 0$ Tengsizlikning butun yechimlari yig'indisini toping?

- A) 77 B) 78 C) 84 D) 90

19. $y = \frac{1}{x^2}$, $y=0$, $x=1$, $x=3$ chiziqlar bilan chegaralangan shaklning yuzini toping?

- A) 2 B) 0,5 C) $\frac{1}{3}$ D) $\frac{2}{3}$

20. $f(x)=ax^2+bx+c$ funksiya uchun $a \neq 0$ va barcha x lar uchun $f(x) < 0$ (ekanligi ma'lum) bo'lsa quyidagilarning qaysi biri doim o'rinli?

- A) $a \cdot (a+b+c) < 0$ B) $a \cdot c < 0$
 C) $\frac{b}{a} < \frac{c}{a} + 1$ D) $(a-b+c) \cdot c < 0$

21. $f(x)$ funksiya berilgan $(a;b)$ intervalda noldan farqli va diffrensialanuvchi bo'lsin. $(f(x))^{-1}$ funksiyaning $(a;b)$ intervalda hosilasini toping?

- A) $(f(x))^{-2} f'(x)$ B) $-(f(x))^{-2}$
 C) $2(f(x))^{-2} f'(x)$ D) $-(f(x))^{-2} f'(x)$

22. $y = \ln(\sin^2 7x + \cos^2 7x)$ funksiyaning eng kichik musbat davrini toping?

- A) π B) 2π C) mavjud emas D) $\pi/2$

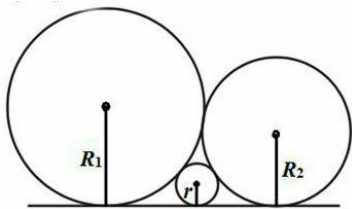
23. $\begin{cases} y = x^8 \\ y = x + 5 \end{cases}$ tenglamalar sistemasi nechta yechimga ega?

- A) 1 B) 2 C) 4 D) 0

24. Agar $f(x) = \frac{x^2}{\sqrt{1+x^2}}$ bo'lsa $f(\text{ctgx})$ ni toping?

- A) $f(\text{ctgx}) = \cos x$ B) $f(\text{ctgx}) = \cos x \text{ctgx}$
 C) $f(\text{ctgx}) = \sin x \text{tgx}$ D) $f(\text{ctgx}) = \text{tgx}$

25. Quyidagi uchta aylana radiuslari uchun qaysi tenglik o'rinli bo'ladi?



- A) $\frac{1}{\sqrt{r}} = \frac{\sqrt{R_1}}{\sqrt{R_2}} + \frac{\sqrt{R_2}}{\sqrt{R_1}}$ B) $\frac{1}{\sqrt{r}} = \frac{\sqrt{R_1 + R_2}}{R_1 \cdot R_2}$
 C) $\frac{1}{\sqrt{r}} = \frac{1}{\sqrt{R_1}} + \frac{1}{\sqrt{R_2}}$ D) $\sqrt{r} = \frac{R_1 \cdot R_2}{\sqrt{R_1 + R_2}}$

26. a va b sonlarning umumiy bo'luvchilari soni 4 ga teng bo'lsa, $a+5b$ va b sonlarining umumiy bo'luvchilari nechta?

- A) 1 B) 2
 C) bir qiymatli aniqlab bo'lmaydi D) 4

27. $\text{tg} 5x = \text{tg}(3x+4)$ tenglamaning butun ildizini toping?

- A) 1 B) 2 C) 3 D) 0

$$x_2 + x_3 + \dots + x_{10} + x_{11} = 1$$

$$x_1 + x_3 + \dots + x_{10} + x_{11} = 2$$

28. Agar bo'lsa,

$$x_1 + x_2 + x_3 + \dots + x_{10} = 11$$

$x_1+x_2+x_3+x_4+x_5$ ni toping?

- A) 16 B) 17 C) 18 D) 13

29. Soddashtiring. $\cos^4 2a + \sin 4a - \sin^4 2a$

- A) $\sqrt{2} \cos\left(4a + \frac{\pi}{4}\right)$ B) $\sqrt{2} \cos\left(4a - \frac{\pi}{4}\right)$
 C) $\cos\left(4a + \frac{\pi}{4}\right)$ D) $\sqrt{2} \sin\left(4a - \frac{\pi}{4}\right)$

30. 8 nafar sportchidan necha xil usulda 4 nafar sportchidan iborat ikkita jamoa tuzish mumkin?

- A) 35 B) 105 C) 140 D) 70

31. $11100 \cdot (1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^2 + 1 \cdot 2^1)$ ikkilik sanoq sistemasidagi amallarni bajaring.

- A) 1111101000 B) 10111101000
 C) 10110101100 D) 10100101000

32. $A_1 = -7$, $A_2 = 1$, $B_1 = 8$, $B_2 = 3$ bo'lsin. Natija 8 ga teng bo'ladigan formulani aniqlang?

- A) $=\text{МИН}(\text{ABS}(A_1); B_2; \text{ABS}(A_2 * B_1))$
 B) $=\text{МАКС}(\text{ABS}(A_1 * A_2); \text{ABS}(B_2 * B_1))$
 C) $= \text{ЕСЛИ}(A_1 * B_2 \geq 0; A_2 + 9; B_2 + 5)$
 D) $= \text{ЕСЛИ}(A_1 * B_2 < 0; A_2 + 5; B_2 + 9)$

33. 16 bayt necha bit ga teng?

- A) 128 B) 132 C) 160 D) 164

34. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?

6. Chala kvadrat tenglama $ax^7 + c = 0$ ko'rinishida bo'lmaydi.

A) $\langle \ul \text{ type="" circle" } \rangle \langle \li \rangle \langle \b \rangle$ Chala kvadrat tenglama $\langle \s \rangle \langle \i \rangle ax \langle \sup \rangle 7 \langle \s \rangle + c = 0 \langle \i \rangle \langle \s \rangle$ ko'rinishida bo'lmaydi. $\langle \b \rangle \langle \ul \rangle$

B) $\langle \ol \ \text{start="" 6" } \rangle \langle \li \rangle \langle \b \rangle$ Chala kvadrat tenglama $\langle \s \rangle \langle \i \rangle ax \langle \sup \rangle 7 \langle \s \rangle + c = 0 \langle \b \rangle \langle \ol \rangle$ ko'rinishida bo'lmaydi. $\langle \b \rangle \langle \ul \rangle$

C) $\langle \ol \ \text{start="" 6" } \rangle \langle \em \rangle \langle \b \rangle$ Chala kvadrat tenglama $\langle \s \rangle \langle \strong \rangle ax \langle \sup \rangle 7 \langle \s \rangle + c = 0 \langle \strong \rangle \langle \s \rangle$ ko'rinishida bo'lmaydi. $\langle \em \rangle \langle \ol \rangle$

D) $\langle \ul \ \text{type="" circle" } \rangle \langle \li \rangle \langle \em \rangle$ Chala kvadrat tenglama $\langle \strong \rangle \langle \i \rangle ax \langle \sup \rangle 7 \langle \s \rangle + c = 0 \langle \i \rangle \langle \strong \rangle$ ko'rinishida bo'lmaydi. $\langle \em \rangle \langle \ul \rangle$

35. Foydalanuvchilarga internet imkoniyatlaridan foydalanishni ta'minlaydigan tashkilot ... hisoblanadi.

- A) provayder B) .uz
 C) server D) TSP/IP

36. Paskal tilidagi quyidagi dastur bajarilgach b o'zgaruvchi natijasini aniqlang: $x := -1$; $y := -1$; $a := 0,1$; IF $(x * x + y > 0)$ AND $(a = 1/10)$ THEN $b := \text{true}$ ELSE $b := \text{false}$;

- A) true B) 1 C) false D) -1

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