MOCK-7

1. To'rt xonali $\overline{5x2y}$ sonini 36 ga bo'lganda 10 qoldiq qolsa, x ning qabul qilishi mumkin bo'lgan qiymatlar yig'indisini toping.

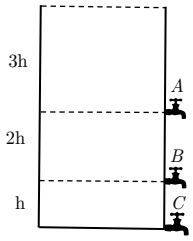
A) 11
B) 10
C) 8
D) 7

2. a, b, c va d natural sonlar uchun $a = 6b + 5 = 8c + 7 = 10d + 9$ tenglik o'rinli bo'lsa, a sonining 700 va 800 sonlari orasidagi qiymati nimaga teng?

A) 719
B) 720
C) 721
D) 781

3. Rasmda ko'rsatilgan bir xil jo'mraklar bir vaqtda ochilganda, to'la hovuzni 6 soatda bo'shatishlari ma'lum. Shunga ko'ra, faqat C jo'mrakning o'zi to'la hovuzni necha soatda bo'shata oladi?

A) 6
B) 12
C) 15
D) 18



4. Orasidagi masofa $30km$ bo'lgan A va B shaharlardan ikki piyoda bir biriga qarab yo'lga chiqdi. Ular uchrashgandan so'ng birinchi piyoda B shaharga 4,5 soatda, ikkinchi piyoda A ga 2 soatda yetib borgan bo'lsa, ularning tezliklari qanday bo'lgan?

A) 4 $km/soat$ va 6 $km/soat$
B) 3 $km/soat$ va 5 $km/soat$
C) 5 $km/soat$ va 7 $km/soat$
D) 4 $km/soat$ va 7 $km/soat$

5. Soddalashtiring: $\sqrt{10+\sqrt{24}+\sqrt{40}+\sqrt{60}}$

A) $\sqrt{5}+\sqrt{3}+\sqrt{6}$
B) $\sqrt{2}+\sqrt{6}+\sqrt{3}$
C) $\sqrt{2}+\sqrt{3}+\sqrt{5}$
D) $\sqrt{3}+\sqrt{6}+\sqrt{7}$

6. Soddalashtiring: $\dfrac{\sqrt[4]{x^5}+\sqrt[4]{xy^4}-\sqrt[4]{x^4y}-\sqrt[4]{y^5}}{\sqrt{x}-\sqrt{y}}\cdot(\sqrt[4]{x}+\sqrt[4]{y})$

A) $\sqrt{x}+\sqrt{y}$
B) $\sqrt{x}-\sqrt{y}$
C) $x-y$
D) $x+y$

7. Hisoblang: $\sqrt{\left(\dfrac{1}{2\cdot 7}+\dfrac{1}{7\cdot 12}+\dfrac{1}{12\cdot 17}+\cdots+\dfrac{1}{67\cdot 72}\right)\cdot\dfrac{2}{7}}$

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

8. $\left|\dfrac{x^2-3x-1}{x^2+x+1}\right|<3$ tengsizliknig eng katta manfiy butun va eng kichik musbat butun yechimlari yig‘indisini toping.

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

9. O‘suvchi arifmetik progressiyaning dastlabki 5 ta hadi yig‘indisi 35 ga, dastlabki uchtasining ko‘paytmasi 105 ga teng bo‘lsa, progressiyaning ayirmasini toping.

A) 2
B) 1
C) 2,5
D) 3

10. $\{b_n\}$ geometrik progressiyaning hadlari uchun:
$(b_4+b_5+b_6)^2-(b_1+b_2+b_3)(b_7+b_8+b_9)$ ifodaning qiymatini toping.

A) q
B) b_1
C) b_1^2
D) 0

11. Hisoblang: $tg9^\circ - tg27^\circ - tg63^\circ + tg81^\circ$

A) 2
B) 3
C) 4
D) 0

12. $\dfrac{1!\cdot 2!\cdot 3!\cdot \ldots \cdot 10!}{(1!)^2\cdot(3!)^2\cdot(5!)^2\cdot(7!)^2\cdot(9!)^2} = A\cdot 2^8$ bo'lsa, A ning qiymatini toping.

A) 15
B) 9
C) 25
D) 21

13. $f(x)=\dfrac{e^x}{x^e}$ funksiyaning eng kichik qiymatini toping.

A) e
B) $\sqrt{e}$
C) 1
D) $\dfrac{1}{e}$

14. $(x^2-6x)^2-2(x-3)^2=81$ tenglama nechta turli haqiqiy yechimga ega?

A) 1
B) 2
C) 3
D) 4

15. Hisoblang: $\dfrac{\sin 2^\circ+\sin 4^\circ+\sin 6^\circ+\cdots+\sin 88^\circ}{\cos 2^\circ+\cos 4^\circ+\cos 6^\circ+\cdots+\cos 88^\circ}$

A) $\sqrt{2}$
B) 1
C) $\dfrac{\sqrt{3}}{2}$
D) 2

16. $\log_{x+2}\log_2\log_{x+3}(11x^2+46x-41)=0$ tenglamaning ildizlari kvadratlari yig'indisini toping.

A) 26
B) 17
C) 10
D) 1

17. $x^3-63x-11=0$ tenglamaning ildizlari a,b,c bo'lsa, $a^3+b^3+c^3$ ifodaning qiymatini toping.

A)13
B) 21
C) 43
D) 33

18. $\operatorname{tg}3x=\operatorname{tg}(90^\circ-2x)$ tenglamaning $x\in[0;\dfrac{\pi}{2}]$ oraliqdagi ildizlari sonini toping.

A) 1
B) 2
C) 3
D) 4

19. Tengsizlikni yeching. $\dfrac{x^3-2x^2-7x-4}{x+5} \geq 0$

A) $(-\infty;-5]\cup[4;\infty)$

B) $(-\infty;-5)\cup[4;\infty)$

C) $(-\infty;-5]\cup\{-1\}\cup[4;\infty)$

D) $(-\infty;-5)\cup\{-1\}\cup[4;\infty)$

20. Agar a,b,c butun sonlar uchun $\sqrt{9-8\sin 50^\circ} = a+b\sin c^\circ$ tenglik o'rinli bo'lsa, $|a|+|b|+|c|$ ifodaning qiymatini toping.

A) 15

B) 16

C) 18

D) 12

21. Aniq integralning qiymatini toping. $\int_1^{\pi/2}(\ln x + 4\sin^2 x)dx$

A) $\dfrac{\pi}{2}(\ln\dfrac{\pi}{2}+1)-\sin 2-1$

B) $\dfrac{\pi}{2}(\ln\dfrac{\pi}{2}+1)+\sin 2-1$

C) $\dfrac{\pi}{2}(\ln\dfrac{\pi}{2}-1)+\dfrac{4}{3}\cos^3 2$

D) $\dfrac{\pi}{2}(\ln\dfrac{\pi}{2}-1)+\dfrac{4}{3}(\sin^3 1-1)$

22. Agar $f(x)-$ juft funksiya bo'lsa, va u $(x^2-4)f(2-x)+\dfrac{f(x^2-2)}{x+1}=1$ shartni qanoatlantirsa, $f(2)$ ning qiymatini toping.

A) $\dfrac{2}{3}$

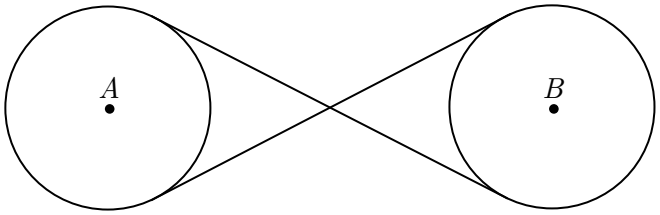
B) $-\dfrac{2}{3}$

C) 1

D) $-\dfrac{1}{3}$

23. Arqon rasmda ko'rsatilgandek, radiuslari 8 birlik bo'lgan A va B markazli teng o'lchamdagi ikkita aylanaga o'ralgan. $AB = 16\sqrt{2}$ birlik bo'lsa, arqonning uzunligini toping.

A) $24\pi + 16$
B) $24\pi + 32$
C) $48\pi + 8$
D) $96\pi + 16$



24. To'g'ri burchakli Dekart koordinatalar sistemasida $y = x^2 - 4x + 5$ funksiyaning grafigiga tegishli $A(1; y_1)$ va $B(x_2; 1)$ nuqtalar berilgan. $\overrightarrow{OA}$ va $\overrightarrow{OB}$ vektorlarning skalyar ko'paytmasini toping. Bunda O nuqta koordinatalar boshi.

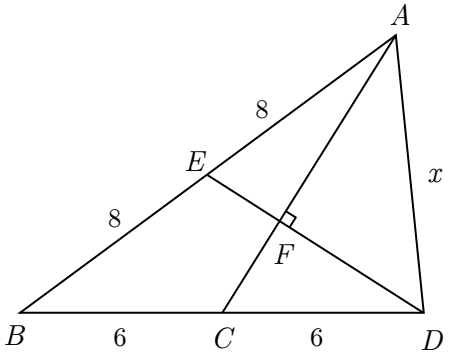
A) -4
B) 2
C) 0
D) 4

25. $|x^2 - 6x + 7| = a$ tenglama kamida 3 ta yechimga ega bo'ladigan a ning butun qiymatlari nechta?

A) 3
B) 2
C) 4
D) 0

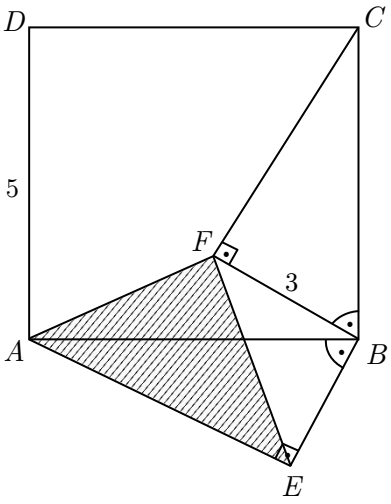
26. ABD uchburchakda $AC \perp ED$, hamda $|AE| = |EB| = 8\,cm$, $|BC| = |DC| = 6\,cm$ bo'lsa, AD kesma uzunligi necha cm ga teng.

A) $2\sqrt{5}$
B) $4\sqrt{5}$
C) 8
D) 10



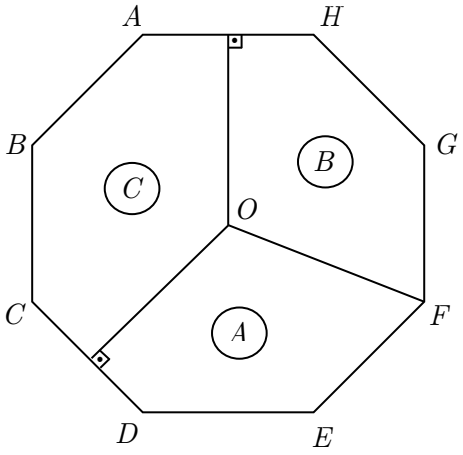
27. $ABCD$ kvadrat, $FC \perp BF$, $AE \perp EB$ hamda, $\angle FBC = \angle ABE$, $|AD| = 5cm$, $|FB| = 3cm$ bo'lsa shtrixlangan soha yuzini toping.

A) 4
B) 4,5
C) 5
D) 6



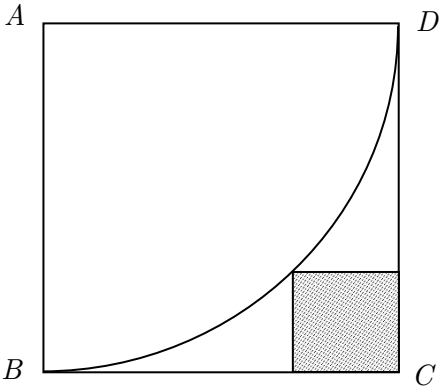
28. Rasmda $ABCDEFGH$ muntazam sakkizburchakning og'irlik markazi O nuqta bo'lsa $\dfrac{C+B}{A}$ ni toping.

A) 2
B) $\dfrac{11}{5}$
C) $\dfrac{13}{5}$
D) 3



29. $ABCD$ kvadratning tomoni 2 cm va bo'yalgan kvadratning bir uchi aylana ustida. Shunga ko'ra shtrixlangan kvadrat yuzi necha cm^2?

A) $3-2\sqrt{2}$
B) $3-\sqrt{2}$
C) $6-4\sqrt{2}$
D) $2-\sqrt{2}$



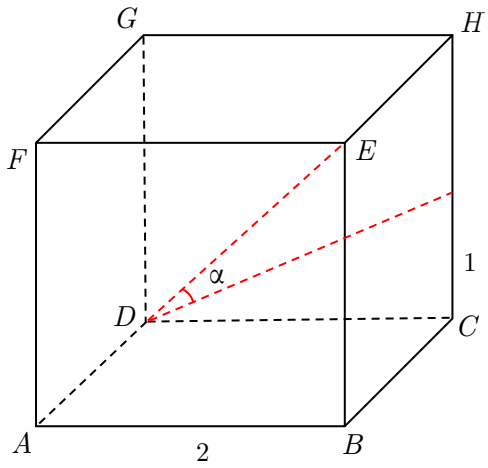
30. Rasmda qirrasi 2 cm bo'lgan $ABCDFEHG$ kub berilgan. Agar P nuqta HC qirraning o'rtasi bo'lsa $\cos\alpha = ?$

A) $\frac{\sqrt{2}}{2}$

B) $\frac{1}{2}$

C) $\frac{\sqrt{15}}{5}$

D) $\frac{\sqrt{5}}{5}$



31. Kitob javonida 4 ta matematika, 3 ta geografiya va 3 ta fizika kitoblari bor. Bir nechta kitob tanlanmoqda. Ular ichidan matematika, geografiya va fizika kitoblaridan kamida bittadan bo'lish sharti bilan necha xil usulda tanlash mumkin?

A) 36
B) 735
C) 864
D)720

32. Uchta mergan baravar nishonga qarata o'q uzishda bitta o'qning nishonga tegish ehtimolligi 0,392 ga teng. Agar birinchi merganning bitta otishda nishonga tekkizish ehtimolligi 0,7 ga, ikkinchi mergan uchun bu ehtimollik 0,6 ga teng bo'lsa, uchinchi merganning bitta otishda nishonga tekkizish ehtimolligini toping.

A) 0,8
B) 0,4
C) 0,2
D) 0,6

Topshiriq (33-35) va javob variantlari (A-F) ni o'zaro moslashtiring.

Asosining tomoni $2\sqrt{3}(\sqrt{5}+1)$ ga teng bo'lgan muntazam oltiburchakli piramidaning yon qirrasi asos tekisligi bilan $60°$ li burchak tashkil qiladi. Piramidaga shar ichki chizilgan. Sharga kub ichki chizilgan. Kubga esa, silindr ichki chizilgan.($\pi \approx 3$ deb olinsin)

33. Shar sirtining yuzini toping.

34. Kubning hajmini toping.

35. Silindr yon sirtining yuzini toping.

A) 432

B) $64\sqrt{3}$

C) 144

D) 256

E) $192\sqrt{3}$

F) $144\sqrt{3}$

36. Ushbu $x^4-(3a+2)x^2+a^2=0$ tenglama berilgan.

a) a ning nechta qiymatida tenglamaning ildizlari arifmetik progressiyani tashkil etadi?

Javob a) _____

b) Tenglamaning ildizlari arifmetik progressiya tashkil etadigan barcha a larning yig'indisini toping.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

37. Tenglamani yeching. $4\sin^3 x\cos 3x+4\cos^3 x\sin 3x=3\sin 2x$

a) Tenglama $[0;2\pi]$ da nechta ildizga ega ?

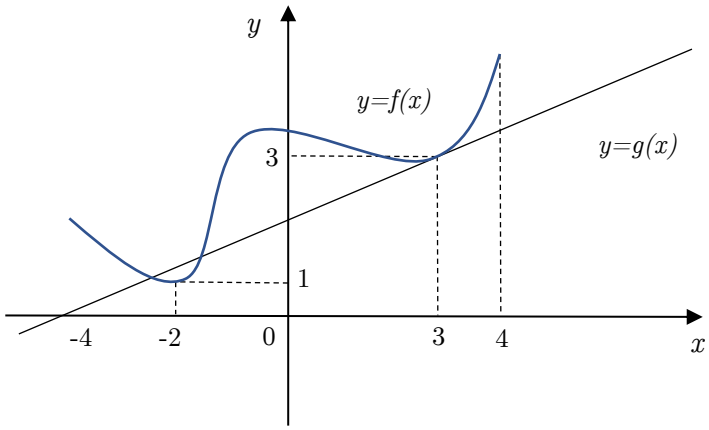
Javob a) _____

b) Tenglamaning $[-\pi;\pi]$ dagi barcha ildizlari yig'indisini toping.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

38. Rasmda $f(x)$ va $g(x)$ funksiyalar berilgan.



a) $\dfrac{f'(3)+f'(-2)}{f(3)-f(-2)}\cdot g'(3)$ ning qiymatini toping.

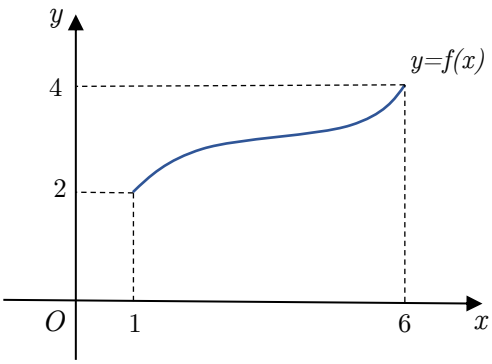
Javob a) _____

b) $\int\limits_{-2}^{3} xf''(x)dx$ ni hisoblang.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

39. Dekart koordinatalar sistemasida $f(x)$ funksiyaning $[1;6]$ kesmadagi grafigi tasvirlangan.



a) $\int_1^6 f(x)dx + \int_2^4 f^{-1}(x)dx$ ning qiymatini toping.

Javob a) _____

b) x ning $(1;6)$ oraliqda $f'(x)f(x) > 0$ tengsizlikni qanoatlantiruvchi barcha butun qiymatlari yig'indisini toping.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

40. $ABCD$ trapetsiyada $AD = 16$ katta asos va $CD = 8\sqrt{3}$ yon tomonlari berilgan. A, B, C nuqtalardan o'tuvchi aylana AD ni N nuqtada kesadi va $\angle ANB = 60^\circ$ tenglik o'rinli.

a) BN kesma uzunligini toping

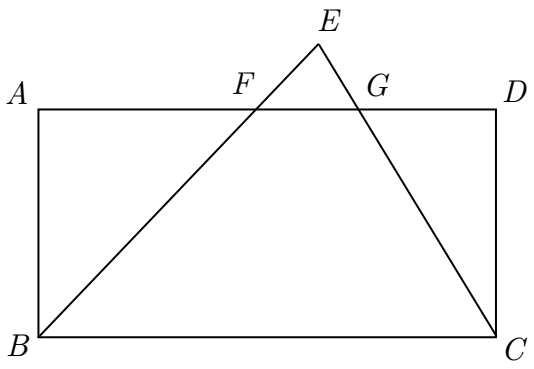
Javob a) _____

b) ACD uchburchak yuzasini toping.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

41. Chizmada $ABCD$ to'g'ri to'rtburchak va BEC uchburchak tasvirlangan. BE va AD kesmalar F nuqtada, EC va AD kesmalar G nuqtada kesishadi. Bunda $S_{FEG} = 4$; $S_{GDC} = 6$; $S_{BFGC} = 45$ o'rinli.



a) $\dfrac{AF}{GD}$ nisbatni toping.

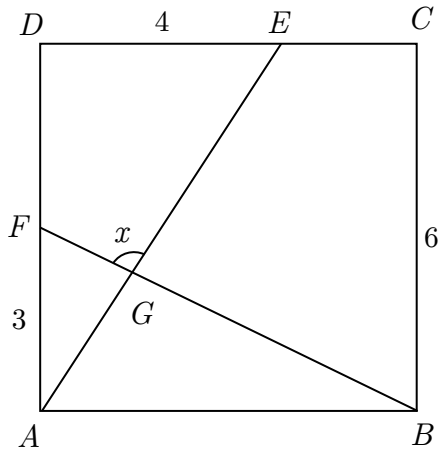
Javob a) _____

b) $ABCD$ to‘g‘ri to‘rtburchakning yuzini toping.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

42. $ABCD$ kvadrat berilgan. Agar $DE = 4$, $AF = 3$ va $BC = 6$ ga teng.



a) $ctgx$ ning qiymatini toping.

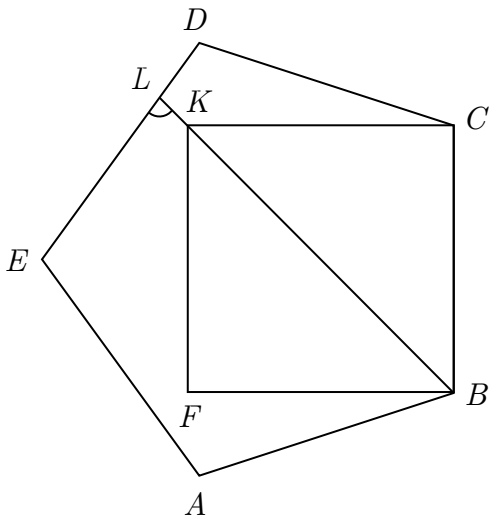
Javob a) _____

b) AFG uchburchak yuzini toping

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

43. $ABCDE$ muntazam beshburchak ichiga $BCKF$ kvadrat ichki chizilgan. Bunda BK to'g'ri chiziq ED kesmani L nuqtada kesib o'tadi.



a) $\angle BLE$ burchakning qiymati necha gradus?

Javob a) _____

b) Agar beshburchakning tomoni uzunligi 4 ga teng bo'lsa, E nuqtadan FK to'g'ri chiziqgacha bo'lgan masofani toping. ($ctg18^\circ \approx 3$ deb hisoblang)

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

44. Kubning asosining bir qirrasidan qarama-qarshi yog'iga o'tkazilgan tekislik yoqning qirrasini asosidan boshlab hisoblaganda 3:1 nisbatda bo'ladi.

a) Hosil bo'lgan kichik jism to'la sirtining kub to'la sirtiga nisbatini toping.

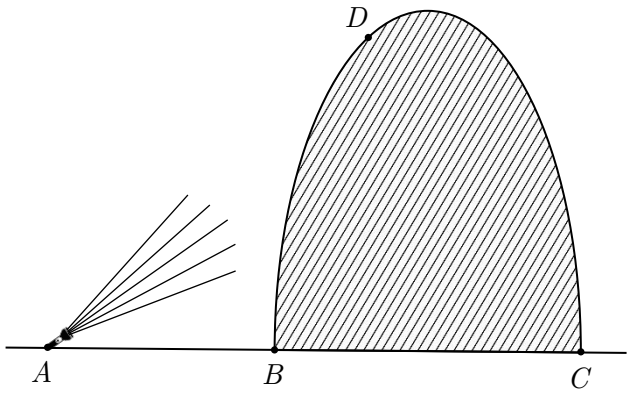
Javob a) _____

b) Hosil bo'lgan kichik jismga ichki chizilgan eng katta hajmli silindr hajmining kub hajmiga nisbatini toping.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

45. Quyidagi rasmda parabolik tepalikning yonboshidagi A nuqtadan tepalikka lazer nuri yo‘naltirilyapti.Tepalikning eng quyi chetki nuqtalari B va C nuqtalardir va $BC = 12$ birlik (A, B, C lar bir to‘g‘ri chiziqda yotadi). Tepalikning eng baland nuqtasi yerdan 18 birlik masofada joylashgan. Tepalikdagi D nuqta yerdan 16 birlik masofada joylashgan. A nuqtada turgan lazer nuri tepalikning D nuqtasiga borib tusha oladi.



a) $tg(\angle DAB)$ ning eng katta qiymatini toping.

Javob a) _____

b) AB kesmaning eng kichik qiymatini toping.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.