

## “IQTISOD” YO’NALISHI MUTAXASSISLARINI TAYYORLASHDA MATEMATIKA FANINI O’QITISH USLUBIYOTI

Jamshid Shoyunus o`g`li Mamayusupov  
Farg’ona pedagogika instituti

### ANNOTATSIYA

Maqolada oliy matematikaning ma’lum yo’nalishlardagi mutaxassis kadrlar yetishishidagi roli va ahamiyati ko’rib chiqilgan. Bugungi darslarda tanlangan masalalar aynan mutaxassislik uchun yo’naltirilsa, uning ahamiyati yanada yaxshi bo’ladi. Oliy ta’lim muassasalarida o’qitilayotgan “matematika” fani taraqqiyotining ustivor yo’nalishlarini nazariy va amaliy tahlil qilish, talabalarga faqatgina tushunchalar berib qolmasdan ularga misol va masalalar yechish yordamida ularni mustaqil mantiqiy fikrlashi, erkin matematik mushohada yurita olishiga erishish, ma’lum qarorlar qabul qila olish uchun zamin yaratish bugungi kun professor-o’qituvchilarning dolzarb vazifasi hisoblanadi. Maqolada oliy matematikaning ayrim mavzularini yoritishda (amaliyot darslarida) tanlanishi mumkin bo’lgan metodlar namunalari keltirilgan.

**Kalit so’zlar:** matematika, iqtisod, oliy ta’lim, pedagogika, mantiqiy fikrlash.

### THE METHODOLOGY OF TEACHING THE SUBJECT OF HIGHER MATHEMATICS TO THE STUDENTS OF «ECONOMIC» SPECIALTY

### ABSTRACT

The article reveals the role and importance of higher mathematics in training specialists. If the tasks set at the lessons are oriented to the specialty, it will be better. The prior aims of the teachers of «Mathematics» nowadays in higher educational institutions are to analyze theoretically and practically, to develop critical thinking of the students by the help of calculations and solution, to be able to make free mathematic thinking and to make students to make decisions.

**Keywords:** mathematics, economics, higher education, pedagogy, logical thinking.

### KIRISH

Hozirgi kundagi “Oliy ta’limning bakalavriat ta’lim yo’nalishlari o’quv rejalaridagi matematika va tabiiy fanlar bloki



mazmuniga qo'yilgan davlat talablari"ni amaldagi kun talabidan kelib chiqqan holda tanqidiy o'rganib chiqish hamda ilg'or xorijiy tajribalar, ta'lim sohasiga oid innovatsiyalardan kelib chiqqan holda unga qo'shimcha va o'zgartirishlar kiritish lozim.

Ushbu ishda ko'rilgan masalalar hozirgi kunda oliy ta'lim muasasalarining o'quv jarayonida muhim ahamiyatga ega bo'lib matematikaning turli bo'limlari uchun umumiy xossalar aytish imkoniyatini beradi. Uning ajoyib qonuniyatlarini o'rganib, ishlab chiqarish, fizika, tibbiyot, biologiya, qurilish va boshqa yo'nalishlardagi tadbirlari haqida fikr yuritish muhim hisoblanadi.

### ADABIYOTLAR TAHLILI VA METODOLOGIYA

Matematika fanini texnika oliy o'quv yurti talabalariga o'tilayotganda, iloji boricha yo'nalishlariga qarab, mutahassisliklaridan kelib chiqib misol va masalalar tanlanishi kerak.

Quyida iqtisod yo'nalishi talabalariga "Tekislikda to'g'ri chiziq" mavzusini yoritish uchun bir necha masalalar namunasi keltirilgan.

Talabalar guruhlariga bo'linadilar(ko'pi bilan 3 guruh). Barcha talabalarga bir xil topshiriq beriladi

Mavzular:

- 1.To'g'ri chiziq tenglamalari turlarini aytib bering.
- 2.Ikki to'g'ri chiziq orasidagi burchakni topish masalasining yechimini qanday topsa bo'ladi?
3. To'g'ri chiziq tenglamalarini qaerlarda qo'llash mumkin?

Real hayotiy masala

Bir shifoxona bosh vrachi zaytunal degan dorini yetkazish muhimligi haqida gapirib o'tdi. Hozirgi kunda bu doriga bo'lgan ehtiyoj juda katta. Aynan shu shifoxonaga 210 donadan kerakligi ma'lum. Undan tashqari yana qaysidir shifoxona 240 donadan buyurtma bergan. Eng qiynayotgan masala dorini yetkazish. Eng kam harajat orqali yetkazish rejasini tuzish kerak. Korxonalar talabini to'g'ri inobatga olgan holda ilgari ham bu korxonalaridan dori –darmonlar olib kelingan. Yetkazib berish xarajatlari xisoboti

Farmasevtika bo'limlari	Shifoxonalar		
	I	II	III
A	4	3	5
B	5	6	4

Bir necha qog'ozlar to'plami qo'limga tushib qoldi



Ro'znomadagi e'lon  
 So'nggi yangilik!!!

Respublikamiz farmatsevtlari olamshumul dorini yaratdilar. Uning nomi “zaytunal” bo'lib, sitelit kasalligini davolashda keng qo'llanilmoqda. Dorining shifobaxshligi olimlar tomonidan e'tirof etildi. Preparat juda qimmat bo'lishiga qaramasdan o'ta og'ir bemorlar uchun bepul tarqatilmoqda. Bu yana bir bor jamiyatga bo'lgan e'tiborning yorqin dalilidir.

Hozirda O'zbekistonda bu dorini ishlab chiqarish uchun ikkita farmatsevtika korxonasi jalb etilgan. Birinchi korxonada bu dori 250 dona, ikkinchisida 350 donadan ishlab chiqarilmoqda. Hozirdan bu doriga buyurtmalar qabul qilinmoqda. Markaziy shifoxona dori uchun 150tadan buyurtma berdi.

*Yechish.* A punktdan I punktga olib borilayotgan mahsulotni  $x$  orqali belgilaylik, A punktdan II - punktga olib borilayotgan mahsulotni  $y$ . I punktdagi ehtiyoj 150 birlikka teng, shuning uchun V punktdan  $(150 - x)$  birlik berilishi kerak. SHu kabi V punktdan II ga  $(240 - y)$  birlik keltirilishi kerak. A punktning mahsulotdorligi 250 birlikka teng, biz  $(x + y)$  birlikni taqsimladik. Demak III uchun mahsulot Adan keladi  $(250 - x -$

y) birlik. III punktning ehtiyojini qondirish uchun, V punktdan  $210 - (250 - x - y) = x + y - 40$  birlik mahsulotni keltirish kifoya

Tashxis rejasi quyidagicha beriladi:

Ishlab chiqarish punkti	Iste'molchi		
	I	II	III
A	x	y	$250 - x - y$
B	$150 - x$	$240 - y$	$x + y - 40$

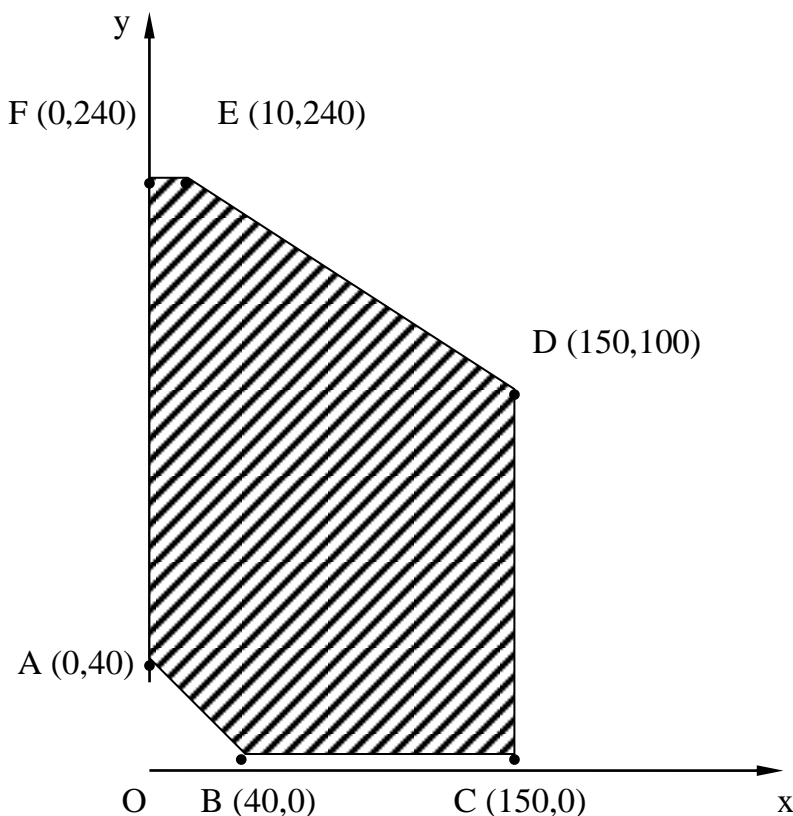
Tashxisning barcha sarfini hisoblash uchun bu jadvaldagi barcha elementlarni yuqoridagi jadvalning mos elementlariga ko'paytirib qo'shamiz. Quyidagiga ega

$$S(x,y) = 4x + 3y + 5(250 - x - y) + 5(150 - x) + 6(240 - y) + 4(x + y - 40) = -2x - 4y + 3280.$$

Masala shartiga ko'ra bu ifodaning minimumini topishimiz kerak.  $x$  va  $y$  musbat qiymatlarni qabul qiladi. Chunki tashilayotgan mahsulot hajmi manfiy qiymatni qabul qila olmaydi. Demak ikkinchi jadval elementlari musbat:

$$x \geq 0, y \geq 0, 250 - x - y \geq 0, 150 - x \geq 0, 240 - y \geq 0, x + y - 40 \geq 0.$$

Berilganlarni tekislikda ifodalasak



Ko'pburchak uchlarini aniqlasak: A(0,40), B(40,0), C (150,0), D (150,100), E (10,240), F (0,240). Tushunarliki tenglama ko'pburchak uchlarida eng kichik qiymatga ega bo'ladi. O'rniga qo'ysak

$$\begin{aligned} S(0,40) &= 3120, & S(40,0) &= 3200, & S(1,500) &= 2980, \\ S(150,100) &= 2580, & S(10,240) &= 2300, & S(0,240) &= 2320. \end{aligned}$$

Bu yerda eng kichik qiymat 2300 ga teng. Bu qiymatga u Ye nuqtada erishadi. E (10, 240), ya'ni,  $x = 10$ ,  $y = 240$ . Jadval esa

Ishlab chiqarish punkti	Iste'molchi		
	I	II	III
A	10	240	0
B	140	0	210

Demak, A punktdan I punktga 10 birlik mahsulot, A punktdan II punktga- 240 birlik va h.k. mahsulot keltirilishi kerak. Rejaning qiymati (sarfi) 2300ga teng

Masala

Stansiyadan har kuni tez yurar va passajir poezdlarini jo'natish mumkin. Ular haqidagi ma'lumotlar quyidagi jadval asosida berilgan.

Poezdlar	sostavdagi vagonlar soni		
	plaskart	kupeli	Yumshoq o'rindiqli
Passajir poezdi	5	6	3
Tez yurar	8	4	1
Vagonlar rezervi	80	72	21

Oxy tekisligida poezdlarning mumkin bo'lgan formirovkasini quring.

*echish.*  $x$  orqali passajir poezdlarning sonini belgilaylik,  $y$  – tez yurar poezdlar. Quyidagi tengsizliklarga ega bo'lamiz:  $5x + 8y \leq 80$ ,  $6x + 4y \leq 72$ ,  $3x + y \leq 21$ ,  $x \geq 0$ ,  $y \geq 0$ .

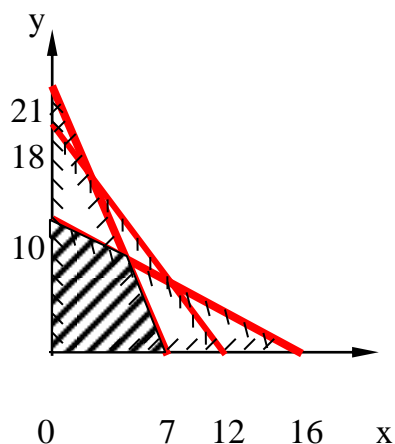
Ularga mos to'g'ri chiziqlarni quramiz:

$$5x + 8y = 80, 6x + 4y = 72, 3x + y = 21, x = 0, y = 0,$$

Kesmalar bo'yicha tenglamalarni yozsak:  $x/16 + y/10 = 1$ ,  $x/12 + y/18 = 1$ ,  $x/7 + y/21 = 1$ ,  $x = 0$ ,  $y = 0$ .

demak tez yurar poezdlar soni 10dan, passajir poezdlari soni esa 7dan oshmasligi kerak.

Tengsizliklarga mos sohani shtrixlasak mumkin bo'lgan qiymatlarga ega bo'lamiz:



Ma'lum bir davlatda aholining o'lishi quyidagi tenglama bilan ifodalanadi.

$$N'(t) = 0.2N(t)(50 - N(t))$$

Bu erda  $N(t)$  million miqdorli (izlanayotgan funksiya)  $t$  vaqt momentdagi aholi miqdori sonini ifodalaydi.

Agar  $N(0) = 20$  bo'lsa,  $N(20)$ , ya'ni 20 yildan so'ng aholi sonini aniqlang.

Berilgan differensial tenglamani Maple dastur tizimi yordamida yechamiz.

> restart;

> de := diff(N(x), x) = 0.2 \* N(x) \* (50 - N(x));

$$de := \frac{d}{dx} N(x) = 0.2 N(x) (50 - N(x))$$

> dsolve(de, N(x));

$$N(x) = \frac{50}{1 + 50 e^{-10x} \_C1}$$

>

> ics := N(0) = 20;

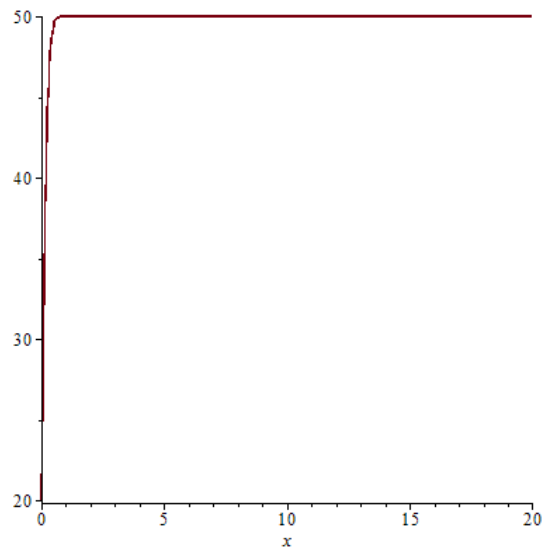
$$ics := N(0) = 20$$

> dsolve({de, ics});

$$N(x) = \frac{100}{2 + 3 e^{-10x}}$$

> plot\left(\frac{100}{2 + 3 e^{-10x}}, x = 0 .. 20\right)





Grafikdan ko`rinib turibdiki, aholining o`shishi dastlabki 1-2 yil ichida tez bo`lib, deyarli 50mln ga yetadi. Keying yillarda esa o`zgarish sekinlashib, deyarli o`zgarmaydi.

## XULOSA

Yuqorida yuritilgan mulohazalardan kelib chiqqan holda bugungi darslarda tanlangan masalalar aynan mutaxassislik uchun yo`naltirilsa, uning ahamiyati yanada yaxshi bo`ladi. Oliy ta`lim muassasalarida o`qitilayotgan “matematika” fani taraqqiyotining ustivor yo`nalishlarini nazariy va amaliy tahlil qilish, talabalarga faqatgina tushunchalar berib qolmasdan ularga misol va masalalar yechish yordamida ularni mustaqil mantiqiy fikrlashi, erkin matematik mushohada yurita olishiga erishish, ma`lum qarorlar qabul qila olish kabi hislatlarini shakllantirish, talabalarga matematika fani va ularni tatbiqlarini o`rgatish, amaliy mashg`ulotlarni o`tkazish davomida talabalarni ko`nikma va malakalarni faol o`zlashtirishni ta`minlovchi uslubiy shart-sharoitlarni, uslublarini aniqlash, matematikaning hozirgi zamon taraqqiyotidagi o`rni va ahamiyatiga e`tiborni jalb etish, matematik fikrlash va xulosa chiqarishni o`rgatishimiz zarur.

## REFERENCES

1. Абдуразаков, А., Махмудова, Н., & Мирзамахмудова, Н. (2020). Численное решение методом прямых интеграла дифференцирования уравнений, связанных с задачами фильтрации газа. *Universum: технические науки*, (7-1 (76)), 32-35. <https://cyberleninka.ru/article/n/chislennoe-reshenie-metodom-pryamyh-integrala-differentsirovaniya-uravneniy-svyazannyh-s-zadachami-filtratsii-gaza>

2. Abdurazakov, A., Makhmudova, N., & Mirzamakhmudova, N. (2021). On one method for solving degenerating parabolic systems by the direct line method with an appendix in the theory of filtration. <https://www.scholarzest.com/index.php/ejrds/article/view/848>
3. Абдуразаков, А., Махмудова, Н., & Мирзамахмудова, Н. (2019). РЕШЕНИЯ МНОГОТОЧЕЧНОЙ КРАЕВОЙ ЗАДАЧИ ФИЛЬТРАЦИИ ГАЗА В МНОГОСЛОЙНЫХ ПЛАСТАХ С УЧЕТОМ РЕЛАКСАЦИИ. *Universum: технические науки*, (11-1), 6-8. <https://elibrary.ru/item.asp?id=42274250>
4. Абдуразаков, А., Махмудова, Н., & Мирзамахмудова, Н. (2019). Решения многоточечной краевой задачи фильтрации газа в многослойных пластах с учетом релаксации. *Universum: технические науки*, (11-1 (68)), 6-8. <https://scholar.google.com/scholar?oi=bibs&hl=ru&cluster=6472907760779931291>
5. Abdurazakov, A., Mirzamahmudova, N., & Makhmudova, N. (2021). “IQTISOD” YO’NALISHI MUTAXASSISLARINI TAYYORLASHDA MATEMATIKA FANINI O’QITISH USLUBIYOTI. *Scientific progress*, 2(7), 728-736. <https://cyberleninka.ru/article/n/iqtisod-yo-nalishi-mutaxassislarini-tayyorlashda-matematika-fanini-o-qitish-uslubiyoti>
6. Abdurazaqov, A., & Mirzamahmudova, N. T. (2021). CONVERGENCE OF THE METHOD OF STRAIGHT LINES FOR SOLVING PARABOLIC EQUATIONS WITH APPLICATIONS OF HYDRODYNAMICALLY UNCONNECTED FORMATIONS. *MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF THE REPUBLIC OF UZBEKISTAN NATIONAL UNIVERSITY OF UZBEKISTAN UZBEKISTAN ACADEMY OF SCIENCES VI ROMANOVSKIY INSTITUTE OF MATHEMATICS*, 32. [https://www.researchgate.net/profile/Alisher-Matyakubov/publication/358022140\\_ABSTRACTS\\_OF\\_THE\\_VII\\_INTERNATIONAL\\_SCIENTIFIC\\_CONFERENCE\\_CONFERENCE\\_MODERN\\_PROBLEMS\\_OF\\_APPLIED\\_MATHEMATICS\\_AND\\_INFORMATION\\_TECHNOLOGIES\\_AL-KHWARIZMI\\_2021/links/61ebcec59a753545e2ebd4d5/ABSTRACTS-OF-THE-VII-INTERNATIONAL-SCIENTIFIC-CONFERENCE-CONFERENCE-MODERN-PROBLEMS-OF-APPLIED-MATHEMATICS-AND-INFO-TECHNOLOGIES-AL-KHWARIZMI-2021.pdf#page=32](https://www.researchgate.net/profile/Alisher-Matyakubov/publication/358022140_ABSTRACTS_OF_THE_VII_INTERNATIONAL_SCIENTIFIC_CONFERENCE_CONFERENCE_MODERN_PROBLEMS_OF_APPLIED_MATHEMATICS_AND_INFORMATION_TECHNOLOGIES_AL-KHWARIZMI_2021/links/61ebcec59a753545e2ebd4d5/ABSTRACTS-OF-THE-VII-INTERNATIONAL-SCIENTIFIC-CONFERENCE-CONFERENCE-MODERN-PROBLEMS-OF-APPLIED-MATHEMATICS-AND-INFO-TECHNOLOGIES-AL-KHWARIZMI-2021.pdf#page=32)
7. Абдуразаков, А., Махмудова, Н. А., & Мирзамахмудова, Н. Т. (2021). ЧИСЛЕННОЕ РЕШЕНИЕ КРАЕВЫХ ЗАДАЧ ДЛЯ ВЫРОЖДАЮЩИХСЯ УРАВНЕНИЙ ПАРАБОЛИЧЕСКОГО ТИПА, ИМЕЮЩИХ ПРИЛОЖЕНИЯ В ФИЛЬТРАЦИИ ГАЗА В ГИДРОДИНАМИЧЕСКИХ НЕВЗАИМОСВЯЗАННЫХ





ПИАТАХ. *Universum: технические науки*, (10-1 (91)), 14-17.

<https://cyberleninka.ru/article/n/chislennoe-reshenie-kraevyh-zadach-dlya-vyrozhdayschihsya-uravneniy-parabolicheskogo-tipa-imeyuschih-prilozheniya-v-filtratsii>

8. Abdurazakov, D. A., Abdurazakov, A., Mirzamakhmudova, N., & Makhmudova, N. ISHLAB CHIQRISHDA YALPI MAXSULOTNI REJALASHTIRISH UCHUN MAPLE DASTURIDAN FOYDALANISH.

[https://www.researchgate.net/profile/Bekjan-](https://www.researchgate.net/profile/Bekjan-Akhmedov/publication/357529270)

[Akhmedov/publication/357529270](https://www.researchgate.net/profile/Bekjan-Akhmedov/publication/357529270) THE USE OF MAPLE SOFTWARE FOR GROSS PRODUCT PLANNING IN PRODUCTION/links/61d2e41eb6b5667157c399ea/THE-USE-OF-MAPLE-SOFTWARE-FOR-GROSS-PRODUCT-PLANNING-IN-PRODUCTION.pdf

9. Qosimova, M. Y., & Yusupova, N. X. (2020). On a property of fractional integro-differentiation operators in the kernel of which the meyer function. *Scientific-technical journal*, 24(4), 48-50.

10. Qosimova, M. Y., Yusupova, N. X., & Qosimova, S. T. (2021). On the uniqueness of the solution of a two-point second boundary value problem for a second-order simple differential equation solved by the bernoulli equation. *ACADEMICIA: An International Multidisciplinary Research Journal*, 11(9), 969-973.

11. Qosimova, S. T. (2021). Two-point second boundary value problem for a quadratic simple second-order differential equation solved by the bernoulli equation. *Innovative Technologica: Methodical Research Journal*, 2(11), 14-19.

12. Qo'Ziyev, S. S., & Mamayusupov, J. S. (2021). UMUMIY O 'RTA TA'LIM MAKTABLARI UCHUN ELEKTRON DARSLIK YARATISHNING PEDAGOGIK SHARTLARI. *Oriental renaissance: Innovative, educational, natural and social sciences*, 1(10), 447-453.

13. Kosimov, K., & Mamayusupov, J. (2019). Transitions melline integral of fractional integrodifferential operators. *Scientific Bulletin of Namangan State University*, 1(1), 12-15.

