INTEGRALLARNI “MAPLE” DASTUR TIZIMI YORDAMIDA HISOBLASH

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ANNOTATSIYA

Maqolada Oliy matematika faninining integrallar bo‘limini o‘rganishda ikki karrali integrallar va ularning tatbiqlari va ularning shaklini, shu bilan birga figuralarni to‘la ko‘rish, ularni qurish masalasining aniq va sifatli yechimini topishda zamonavioy matamatik paketlardan bo‘lgan Maple tizimidan foydalanish samarali ekanini ko‘rsatish.

Kalit so‘zlar: *integral, figura, karrali integral.*

ВЫЧИСЛЕНИЕ ИНТЕГРАЛОВ С ПОМОЩЬЮ СИСТЕМЫ ПРИЛОЖЕНИЙ “MAPLE”

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АННОТАЦИЯ

При изучении интегралов в высшей математике эффективно использовать систему Maple, которая представляет собой современный математический пакет, для изучения двойных интегралов и их приложений и их формы, а также для полного просмотра фигур, нахождения четкое и качественное решение их конструкции.

Ключевые слова: *интеграл, фигура, кратный интеграл.*

COMPUTATION OF INTEGRALS USING THE “MAPLE” APPLICATION SYSTEM

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ABSTRACT

In the study of integrals in higher mathematics, it is effective to use the Maple system, which is a modern mathematical package, in the study of double integrals

and their applications and their shape, as well as a complete view of the figures, finding a clear and qualitative solution to their construction. show that.

***Keywords**: integral, figure, multiple integral.*

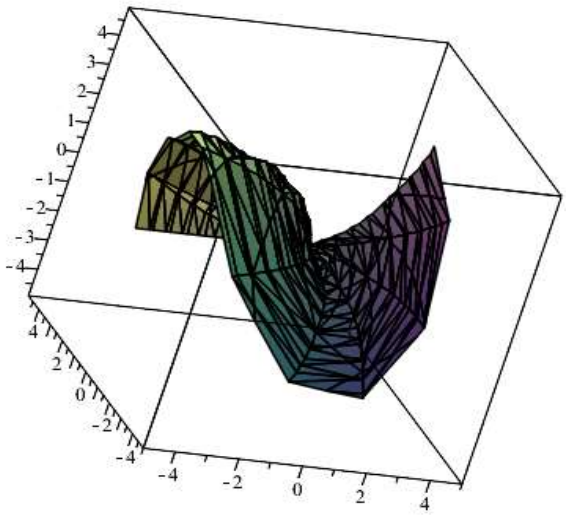
KIRISH

Bugungi kunda eng asosiy e'tibor talabalarni bilimini yanada chuqurroq bo'lishiga erishish, ta'lim jarayonida yangi texnologik o'zgarishlar bilan tanishtirishdan iborat. Hozirda, ayniqsa, hisoblash ishlari uchun juda ko'p dasturlar ishlab chiqarilmoqda. Informasion texnologiyalar bilan fanning integratsiyasi ishlab soxalarining rivojlnishi uchun zamin bo'lib xizmat qiladi [1-4].

Ushbu maqolada integrallarni yechish masalalarida Maple dastur tizimi imkoniyatlaridan foydalanish haqida fikr yuritiladi.

Maple tizimining imkoniyatlridan biri figurani to'la ko'rish uchun imkoniyat yaratilishidir [5-11].

```
> restart
> with(plots) :
> implicitplot3d(r = x*(y^2), r = 0.1..5, x = -1..2*Pi, y = 0..Pi, coords = spherical);
```



$$\int_0^1 \int_0^1 x y^2 \, dx dy$$

```
> int(x*y^2, x, y)
```

$$\frac{1}{6} x^2 y^3$$

Интегралларни ҳисоблашда қадам- бақадам кўриш мумкин.

```
> with(student):
```

```
> infolevel[Student[Calculus1]] := 1:
> Res:=Int(1/(x^2+4*x+5),x=0..1);
```

$$Res := \int_0^1 \frac{1}{x^2 + 4x + 5}\, dx$$

```
> Hint(Res);
```

$$[change,\ u = x + 2,\ u]$$

Ўзгарувчиларни алмаштирайлик

```
> Res:=Rule[change, u = x+2, u](Res);
```

$$Res := \int_0^1 \frac{1}{x^2 + 4x + 5}\, dx = \int_2^3 \frac{1}{1 + u^2}\, du$$

```
> Res:=Rule[change, u = tan(v), v](Res);
```

$$Res := \int_0^1 \frac{1}{x^2 + 4x + 5}\, dx = \int_{\arctan(2)}^{\arctan(3)} 1\, dv$$

```
> Result:=Rule[constant](Res);
```

```
> simplify(Result);
```

$$\int_0^1 \frac{1}{x^2+4x+5}\,dx = \arctan\left(\frac{1}{7}\right)$$

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