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FORMATION OF MATHEMATICAL EXPRESSION OF AUTOMATIC CONTROL SYSTEMS IN STUDENTS

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Abstract:
The article focuses on the issues of modernizing the educational system, restructuring it structurally, changing and updating educational programs, taking into account the modern achievements of Education, Science, Technology and technology, economy and Culture on a global scale.

In this regard, it is envisaged that the broad adoption of advanced technologies, integration of continuing education with science and production in the development of economic issues, entrepreneurship, small and private business, the introduction of a differentiated approach to education in accordance with the abilities and capabilities of students, the creation of advanced pedagogical technologies of education, modern educational and methodological complexes will be the basis for

Keywords: Educational modernization, value, virtue, environment, pedagogical process, advanced technologies

As you know, knowledge and skills are closely related to one another. The younger generation of school graduates must be armed with technical knowledge, skills and skills. The development of industry and the development of technology in all spheres of the national economy are increasingly making high demands on the training of qualified working personnel and increasing their professional skills. Therefore, the role of mechanization and automation in the fields of Labor and professional education and other technical sciences of the KHAM pedagogical institutes is of great importance for students the teaching of the science of management of technical systems.

Currently, the implementation of automatic control systems for production machines in the industry and their control work remain complicated. Experiments show that the use of automatic control in the operation of machines on machine tools and complex lines according to the specified programs prolongs their service life to the point of preventing them from breaking down, improves the culture of work, significantly reduces the costs and labor costs incurred to eliminate failures. For this reason, automatic controls in the industry need to be simple, compact, inexpensive, thorough.

Management systems, in a broad sense, are a set of technical, organizational, economic, cultural and other activities aimed at ensuring the management of the production process without human participation. The physical motility and constructive structure of automatic control systems (abs) are different, the state of which is represented by simple differential equations. Differential equations of ABSS are constructed in a given sequence. First abs are decomposed into some functional elements, and then into structural zvenos.

The equations of the elements of ABS are based on the cones of mechanics, electrical engineering, thermo and hydrodynamics, depending on their physical properties. The random physical processes in most elements of ABS are extremely complex and are expressed using nonlinear differential equations.

These differential equations are converted into linear equations, that is, linearized. Continuous nonlinear functions are linearized to the case where F (x) uses the Taylor series:

$$f(x)=f(x)_0+\frac{f^{i}(x)_0}{1!}\Delta x+\frac{f^{ii}(x)_0}{2!}\Delta x^2+....$$

The result of linearization, bounded by two slices, is expressed in terms of the acting, or, with respect to the corrective effect, the slight deviation is expressed in terms of e / Δx=xo-x as follows:

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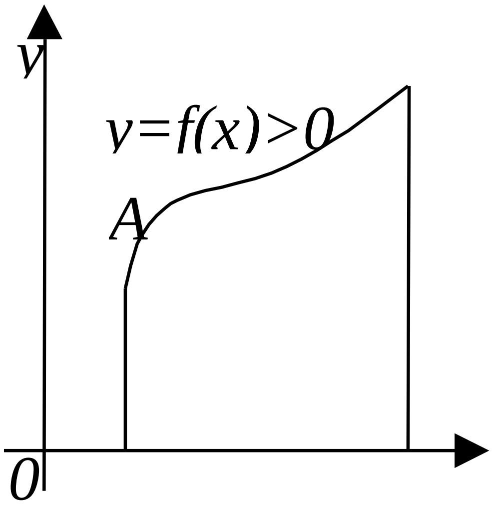
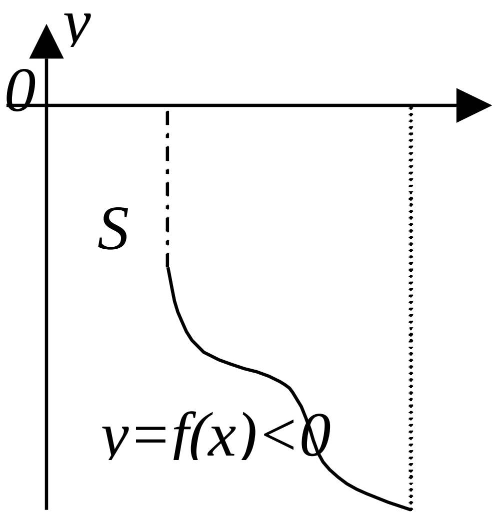
or

$$f(x) \approx f(x)_0 + f^i(x)_0 \Delta x;$$
$$\Delta f(x) \approx f^i(x)_0 \Delta x = k\Delta x$$

As you can see, the smaller it is, the smaller it is, the smaller the spread error Ham To facilitate the analysis of the ABS, the influencing cell $\Delta x=f(t)$ and the governing cell $\Delta x=g(t)$ of the effects are absorbed. More leaping effects are used, giving it an amplitude equal to 1, i.e., the eave $\Delta x=1(t)$ or the wobble effects:
eject $\Delta x=A_0 sin\omega t$. e.g. t.
Typical effects on elements of automatics with different physical natures help to express transition processes through the same differential equations. This condition allows the elements to be divided into types depending on the appearance of differential equations. It is accepted to represent the equations in the

form of an operator, and the differential operator $P=\frac{d}{dt}$ is introduced.
From the equation in the form of an operator, the transfer function W(p) is found. The transfer function is said to be the ratio of the output magnitude У (p) in the form of an operator to the input quantity X (p)in the form of an operator.
Applying the exact integral to geometry
As we know *aABb* the face of a curved trapezoid would be equal to $S=\int_a^b (x)\ dx$, where if $f(x)\geq 0$. If [a, b] in the cross section $f(x)\leq 0$, then the exact integral $S=\int_a^b f(x)dx\leq 0$, by the absolute value it is equal to the surface of the corresponding trapeze $S=|\int_a^b f(x)\ dx|$.





If it is necessary to calculate the face of a figure bounded by curves $y_1=f_1(x)$ and $y_2=f_2(x)$ and straight lines $x=a$ and $x=b$ then f1(x) is equal to the face of the figure in which the condition $f_1(x)\geq f_2(x)$ is satisfied.
$S = \int_a^b f_1(x)\ dx - \int_a^b f_2(x)\ dx = \int_a^b (f_1(x) - f_2(x))dx$

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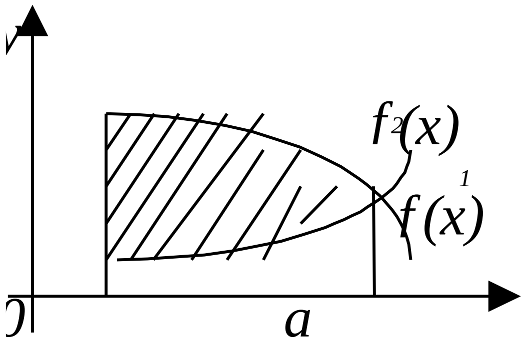

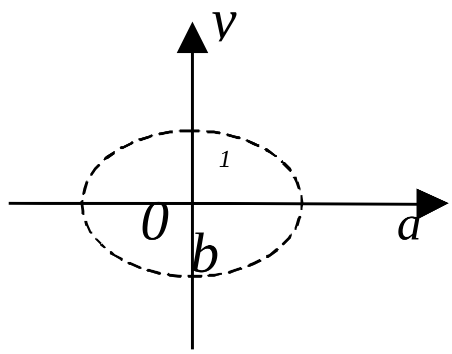

Example 1. $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ let the face of the figure bounded by the Ellipse be calculated.
Solution: using the symmetry of the Ellipse with respect to the coordinate axes, we find the face of the figure $S=4S_1$.

Therefore, $S=4\int_0^a ydx$ in this Therefore, in this $y=\frac{b}{a}\sqrt{a^2-x^2}$ Ellipse's equation for the 1st quarter is $S=\frac{4b}{a}\int_0^a\sqrt{a^2-x^2}dx$ need to find, at $x=a\cdot sint$ let's say $dx=acostdt;$ at $x=0$ at $t=0$; $x=a$ at t= $\frac{\pi}{2}$ values are formed.

$$S=\frac{4b}{a}\int_0^{\frac{\pi}{2}}\sqrt{a^2-a^2\sin^2 t}a\cos tdt=4ab\int_0^{\frac{\pi}{2}}\cos^2 tdt=$$

$$=2ab\int_0^{\frac{\pi}{2}}(1+\cos 2t)dt=2ab(t+\frac{\sin 2t}{2})|_0^{\frac{\pi}{2}}=2ab\frac{\pi}{2}=\pi ab$$ kv.unit.

If $a=b$, the surface of the circle is formed $S=\pi a^2$ kv.unit.
If the surface of the curved trapezoid $x=\varphi(t)$ and $y=\psi(t)$ is bounded by the line given in the parametric form, then($t\in[\alpha,\beta]$ va $\varphi(\alpha)=a, \varphi(\beta)=b$) and φ(α)=a, φ(β)= b) then these equations define a function y=f(x) on the section [a, b].
$x=\varphi(t)$, $dx=\varphi'(t)dt$
$y=f(x)=f[\varphi(t)]=\psi(t)$
$a=\varphi(\alpha)$ $b=\varphi(\beta)$
As a result, curve in the string of a string in the space of a string in the space of a $S=\int_\alpha^\beta\psi(t)\varphi'(t)dt$ is the formula for calculating the face of a trapezoid when the line is given by parametric equations.

Example 1. $\begin{cases} y=r\sin t \\ x=r\cos t \end{cases}$ let the surface of the circle given by the equations be found $\alpha\leq t\leq\beta$.

$$S=4\int_0^{\frac{\pi}{2}}r\sin tr\sin tdt=4r^2\int_0^{\frac{\pi}{2}}\frac{1-\cos 2t}{2}dt=4r^2\frac{1}{2}t|_0^{\frac{\pi}{2}}-$$

$$-4r^2\frac{\sin 2t}{4}|_0^{\frac{\pi}{2}}=4r^2\frac{1}{2}\frac{\pi}{2}-0=\pi r^2$$

Scircli $S_{doira}=\pi r^2$ that.
In a polar coordinate system, the surfaces of flat forms are.
Issue. $\rho=\varphi(\theta)$ $(\alpha\leq\theta\leq\beta)$ at $\theta=\alpha$ at $\theta=\beta$ let = count the area of the curved sector bounded by the straight lines of the curve of the edge of the edge.

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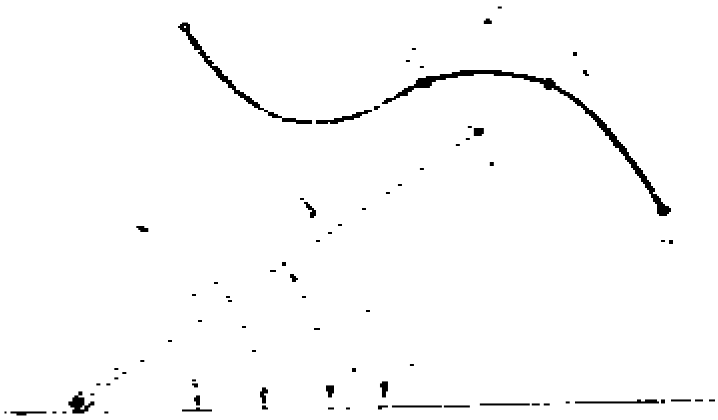


Let the function $\rho=\varphi(\theta)$ be continuous on the section $[\alpha, \beta]$. $[\alpha, \beta]$ cut arbitrarily as follows.

$\alpha=\theta_0, \theta_1, \ldots, \theta_k, \theta_{k+1}, \ldots, \theta_n=\beta$

As a result of this shredding, the cross section $[\alpha, \beta]$ is divided into n sections of the form $[\theta_k,\theta_{k+1}]$ $(k=0, n-1)$. As a result of grinding, the curved sector is n $oM_kM_{k+1}O$ is divided into curved sectors. Since the function $\rho=\varphi(\theta)$ is continuous on the section $[\alpha,\beta]$, it is also continuous on each $[\theta_k,\theta_{k+1}]$ sections formed by cutting it. According to Weierstrass' II theorem, the function $\rho=\varphi(\theta)$ has its definite lower μk and definite upper Mk values on the section $[\theta_k, \theta_{k+1}]$.

$m_k = \inf\{\rho(\theta)\}$ $\quad \theta_k \le \theta \le \theta_{k+1}$. $\quad M_k = \sup\{P(\theta)\}$

On the sector $oM_kM_{k+1}O$ we draw sectors with radii equal to m_k and M_k.

$\theta_{k+1}-\theta_k=\Delta\theta_k$ is the largest among $\lambda=max(\Delta\theta_k)$ $oM_kM_{k+1}O$ curved sector, the surface of the sector drawn inside the curved sector is equal to $\frac{m_k^2}{2}\cdot\Delta\theta_k$ and the surface of the sector drawn outside is equal to $\frac{M_k^2}{2}\cdot\Delta\theta_k$. The sum of the surfaces of all internal and external drawn sectors is as follows

$P_1=\sum_{k=0}^{n-1}\frac{m_k^2}{2}\cdot\Delta\theta_k$ and $P_2=\sum_{k=0}^{n-1}\frac{M_k^2}{2}\cdot\Delta\theta_k$

will be equal.

Since $[\alpha, \beta]$ is continuous on the cross section, these and are the lower and upper Darboux sums constructed for the function $\frac{1}{2}\cdot\varphi^2(\theta)$.

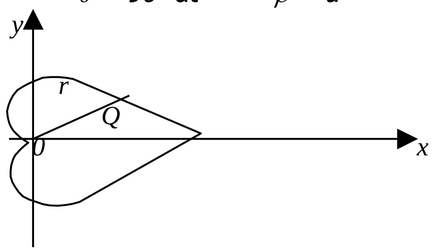
According to the definition of definite integral

$\lim_{\lambda\to0}(P_2-P_1)=0$ or $\lim_{\lambda\to0}P_2 - \lim_{\lambda\to0}P_1=0$ $\lim_{\lambda\to0}P_2=\lim_{\lambda\to0}P_1=S$

the surface of the curved sector is $S_{sek}=\lim_{\lambda\to0}P_1=\lim_{\lambda\to0}P_2=\int_\alpha^\beta\frac{1}{2}\varphi^2(\theta)d\theta$.

Example: Let $\rho=a(1+cos\theta)$ be the surface bounded by the cardoid curve.

$\theta = 0$ at $\rho=2a$
$\theta = 90°$ at $\rho = a$



$S_{kardioda}=2\cdot\frac{1}{2}\int_0^\pi a^2(1+cos\theta)^2d\theta=a^2\int_0^\pi(1+2cos\theta+cos^2\theta)d\theta=$

$=a^2[\theta+2sin\theta+\frac{1}{2}\cdot(\theta+\frac{\sin 2\theta}{2})]\,|_0^\pi = a^2(\pi+\frac{\pi}{2}-0)=\frac{3}{2}\pi a^2$

LITERATURE AND SOURCES

1. Ulukhanov I.T., Khusainova G.A., Ubaydullaev S.K. Criteria for the formation of creative competence of students. scientific journal of scientific progress. VOLUME 2 | ISSUE 8 | 2021 ISSN: 2181-1601. 814-828 b.

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2. I.T.Uluxanov, A Sayfitdinov. SOLUTIONS TO CERTAIN ISSUES OF EMERGENCY PROTECTION. Mejdunarodnыy nauchno-obrazovatelьnыy elektronnыy jurnal «OBRAZOVANIE I NAUKA V XXI VEKE» V. № 9. Tom 3. (dekabrь, 2020) 356-361.
3. I.T.Ulukhanov, SH.Mamadboev. On some issues of protection of the population and territories. Özr FVVA. "Innovative approach to ensuring the safety of vital activity, scientific developments and modern technologies'. MATERIALS OF THE SCIENTIFIC AND PRACTICAL CONFERENCE OF YOUNG SCIENTISTS IN REZPUBLIKA II. Tashkent. 2020. March 13-14. Pp. 281-285.
4. Ulukhanov I.T., Khusainova G.A., Ubaydullaev S.K. Pedagogical conditions for the formation of creative competence of students. web of scientist: international scientific research journal. ISSN:2776-0979.Voliume 3, Issue 5, May., 2022. Impact factor(2022):7,565.
5. Abdullaev S.X. System and technology of organizing the environment for the development of ergonomic culture of teachers // modern education. Tashkent, 2021. No. 9. B.28- 36.
6. I.T.Ulukhanov (NamDU, S.Ubaydullaev (AnDU). The practical importance of using control-measuring instruments in technology lessons. "Innovative ideas, developments to practice, problems and solutions". Materials of the international scientific and practical conference. Andijan. 2020. May 27.
7. I.T.Ulukhanov, A.Zuparov (AnDU). The use of Mul'timedia technologies in the educational process. Republican-wide scientific and technical conference on the topic" problems and solutions for teaching technology in schools of general secondary education". Kokan. November 18, 2020. 276-278.
8. I.T.Ulukhanov, G.Khusayinova, M.Turgunpolatov. Lubricating materials and methods of their effective use. Interdisciplinary innovation and scientific research in Uzbekistan. 2021. No. 3. 386-389.
9. I.T.Ulukhanov, G.Khusayinova, Z.Kuchova. Solution of environmental issues in the study of the basics of technical sciences. Interdisciplinary innovation and scientific research in Uzbekistan. 2021. No. 3. 394-398.
10. Ulukhanov I.T., Umarov K.M. The role of technology science in the formation of ecological culture in schoolchildren. International scientific online conference. USA.2022