VARIANTS

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TASK 1. Variants of tasks for the independent work

A number of variant	Tasks
1	The company produces products of two types A and B. The cost function is $C(x,y)=x^2+xy+y^2$. The profit per unit output of product A is 800, the profit per unit output of product B is 1000. Define an optimal plan of output if the objective is to find a maximum of a profit. Make an analysis of the obtained values in the problem.
2	The company produces products of two types A and B. The cost function is $C(x,y)=2x^2+4xy+4y^2$. The profit per unit output of product A is 400, the profit per unit output of product B is 300. Define an optimal plan of output if the objective is to find a maximum of a profit. Make an analysis of the obtained values in the problem.
3	The company produces products of two types A and B. The cost function is $C(x,y)=\frac{3}{2}x^2+2xy+y^2$. The profit per unit output of product A is 320, the profit per unit output of product B is 240. Define an optimal plan of output if the objective is to find a maximum of a profit. Make an analysis of the obtained values in the problem.
4	The company produces products of two types A and B. The cost function is $C(x,y)=x^2+3xy+y^2$. The profit per unit output of product A is 160, the profit per unit output of product B is 140. Define an optimal plan of output if the objective is to find a maximum of a profit. Make an analysis of the obtained values in the problem.
5	The company produces products of two types A and B. The cost

	function is $C(x,y)=x^2+xy+y^2$. The profit per unit output of product A is 800, the profit per unit output of product B is 1000. Define an optimal plan of output if the objective is to find a maximum of a profit. Make an analysis of the obtained values in the problem.
6	The company produces products of two types A and B. The cost function is $C(x,y)=2x^2+4xy+4y^2$. The profit per unit output of product A is 400, the profit per unit output of product B is 300. Define an optimal plan of output if the objective is to find a maximum of a profit. Make an analysis of the obtained values in the problem.
7	The company produces products of two types A and B. The cost function is $C(x,y)=\frac{3}{2}x^2+2xy+y^2$. The profit per unit output of product A is 320, the profit per unit output of product B is 240. Define an optimal plan of output if the objective is to find a maximum of a profit. Make an analysis of the obtained values in the problem.
8	The company produces products of two types A and B. The cost function is $C(x,y)=x^2+3xy+y^2$. The profit per unit output of product A is 160, the profit per unit output of product B is 140. Define an optimal plan of output if the objective is to find a maximum of a profit. Make an analysis of the obtained values in the problem.

TASK 2. Variants of tasks for the independent work

A number of variant	Tasks
1	Find indefinite integrals of the following functions: 1) $\int(2-5x)^{10}dx=$ 2) $\int\cos(2x+6)dx=$ 3) $\left(5-7x-\frac{6}{\sqrt{x}}-9\cos x+\frac{5}{\sin^2 x}-\frac{4}{1+x^2}-\frac{3}{\sqrt{1-x^2}}\right)dx=$ Find the definite integrals: $\int_{-1}^{2}\left(10x^3-5x^2+4x-2\right)dx$
2	Find indefinite integrals of the following functions: 1) $\int(3-6x)^8dx=$ 2) $\int\sin(4x-5)dx=$

	3) $\int\left(5x^2-6\sqrt{x}+8\sin x-\frac{7}{\cos^2 x}-\frac{4}{x}+5^x-7e^x\right)dx=$ Find the definite integrals: $\int_{-1}^{2}\left(5x^3-2x^2+3x-4\right)dx$
3	Find indefinite integrals of the following functions: 1) $\int(4-5x)^9\,dx=$ 2) $\int\cos(2x+3)dx=$ 3) $\left(5-7x-\frac{6}{\sqrt{x}}-9\cos x+\frac{5}{\sin^2 x}-\frac{4}{1+x^2}-\frac{3}{\sqrt{1-x^2}}\right)dx=$ Find the definite integrals: $\int_{-2}^{1}\left(-4x^3+8x^2-2x+3\right)dx$
4	Find indefinite integrals of the following functions: 1) $\int(2-8x)^6\,dx=$ 2) $\int\sin(4x+7)dx=$ 3) $\int\left(5x^2-6\sqrt{x}+8\sin x-\frac{7}{\cos^2 x}-\frac{4}{x}+5^x-7e^x\right)dx=$ Find the definite integrals: $\int_{-1}^{2}\left(9x^3-4x^2+3x-5\right)dx$
5	Find indefinite integrals of the following functions: 1) $\int(3-9x)^5\,dx=$ 2) $\int\cos(7x-2)dx=$ 3) $\left(5-7x-\frac{6}{\sqrt{x}}-9\cos x+\frac{5}{\sin^2 x}-\frac{4}{1+x^2}-\frac{3}{\sqrt{1-x^2}}\right)dx=$ Find the definite integrals: $\int_{-2}^{1}\left(10x^3-5x^2+4x-2\right)dx$
6	Find indefinite integrals of the following functions: 1) $\int(2-7x)^4\,dx=$

	2) $\int \sin(8x+3)dx =$ 3) $\int\left(5x^2-6\sqrt{x}+8\sin x-\frac{7}{\cos^2 x}-\frac{4}{x}+5^x-7e^x\right)dx =$ Find the definite integrals: $\int_{-2}^{1}\left(5x^3-2x^2+3x-4\right)dx$
7	Find indefinite integrals of the following functions: 1) $\int(3-5x)^7\,dx =$ 2) $\int \cos(4x-2)dx =$ 3) $\left(5-7x-\frac{6}{\sqrt{x}}-9\cos x+\frac{5}{\sin^2 x}-\frac{4}{1+x^2}-\frac{3}{\sqrt{1-x^2}}\right)dx =$ Find the definite integrals: $\int_{-1}^{2}\left(-4x^3+8x^2-2x+3\right)dx$
8	Find indefinite integrals of the following functions: 1) $\int(5-8x)^6\,dx =$ 2) $\int \sin(7x+3)dx =$ 3) $\int\left(5x^2-6\sqrt{x}+8\sin x-\frac{7}{\cos^2 x}-\frac{4}{x}+5^x-7e^x\right)dx =$ Find the definite integrals: $\int_{-2}^{1}\left(9x^3-4x^2+3x-5\right)dx$

TASK 3. Variants of tasks for the independent work

A number of variant	Tasks
1	Find the area of the plane figure, bounded by functions: $y=x^2+3x,\ \ y=3+x.$
2	Find the area of the plane figure, bounded by functions: $y=x^2+2x,\ \ y=2+x.$

3	Find the area of the plane figure, bounded by functions: $y=-x^2+6x-5,\quad x+y-1=0.$
4	Find the area of the plane figure, bounded by functions: $y=2x-x^2;\quad y=x$
5	Find the area of the plane figure, bounded by functions: $y=x^2-3x,\quad y=x-3$
6	Find the area of the plane figure, bounded by functions: $y=x^2+5x,\quad y=x+5$
7	Find the area of the plane figure, bounded by functions: $y=x^2-4x,\quad y=x-4$
8	Find the area of the plane figure, bounded by functions: $y=x^2+2x,\quad y=-x+4$