Лабораторна робота №1. Обчислення виразів

Обчислити значення змінних за заданими формулами і вхідними даними

1. $y = ac^{-\sqrt{x}}\cos(bx) + c;\ z = \dfrac{2\cos\left(y - \dfrac{\pi}{6}\right)}{\dfrac{1}{2} + \sin^2 y};\ w = 1 + \dfrac{z^2}{3 + \dfrac{z^2}{5}},$

де $a = 1{,}5;\quad b = 2;\quad c = 0{,}75;\quad x = 1{,}3.$

2. $k = 86{,}9^{1/4} + \left(\dfrac{1}{2^{-0{,}9}}\right)^{1/9};\quad m = 37^{1-\ln 9} + 5^{-\lg 6};\quad p = \sin(5k + 3m\ln 3).$

3. $a = 2^{-x}\sqrt{x + \sqrt[4]{|y|}};\quad b = \sqrt[9]{e^{x - \frac{1}{\sin x}}} + 2az,$

де $x = 3{,}981;\quad y = 1{,}625;\quad z = 0{,}512.$

4. $A = \ln\left|\left(y - \sqrt{|x|}\right)\left(x - \dfrac{y}{z + x^2}\right)\right|;\quad B = x - \dfrac{x^2}{3} - \dfrac{x^5}{5},$

де $x = -2{,}3;\quad y = 1{,}2;\quad z = 5{,}6.$

5. $A = \dfrac{1 + \sin^2(x + y)}{2 + \left|x - \dfrac{2x}{1 + x^2 y^2}\right|} + x;\quad B = \cos^2\left(\operatorname{arctg}\dfrac{1}{2}\right),$

де $x = 0{,}05;\quad y = 1{,}74;\quad z = -0{,}5.$

6. $A = \dfrac{2\cos\left(x - \dfrac{\pi}{6}\right)}{\dfrac{1}{2} + \sin^2 y};\quad B = 1 + \dfrac{z^2}{3 + \dfrac{z^2}{5}},$

де $x = 6{,}14;\quad y = 1{,}7;\quad z = -5{,}5.$

7. $A = y + \dfrac{x}{y^2 + \dfrac{x^2}{\left|y + x^9\right|}};\quad B = 1 + \operatorname{tg}^3\dfrac{z}{2},$

де $x = 0{,}5;\quad y = 1{,}3;\quad z = -0{,}84.$

8. Задані x, y, z. Обчислити a, b, якщо

$$a = \frac{\sqrt{|x-1|} - \sqrt[3]{|y|}}{1 + \dfrac{x^2}{2} + \dfrac{y^2}{4}},\quad b = x(arctgz + e^{-(x+3)});$$

9. $a = (1 + y)\dfrac{x + y(x^2 + 4)}{e^{-x-z} + \dfrac{1}{x^2 + 4}};\quad b = \dfrac{1 + \cos(y - 2)}{x^4/2 + \sin^2 z},$

де $x = 4{,}4;\quad y = -1{,}2;\quad z = 0{,}2.$

10. $a=\dfrac{3+e}{1+x^2\left|y-\mathbf{tg}\,z\right|}$; $b=1+\left|y-x\right|+\dfrac{(y-x)^2}{2}+\dfrac{\left|y-x\right|^3}{3}$,

де $x=0{,}5$; $y=1{,}3$; $z=-0{,}84$.

11. $a=\dfrac{\sqrt{\left|x-1\right|}-\sqrt[9]{\left|y\right|}}{1+\dfrac{x}{2}+\dfrac{y}{4}}$; $b=x\left(\mathbf{arctg}\,z-e^{-(x+9)}\right)$,

де $x=3{,}8$; $y=-0{,}6$; $z=1{,}2$.

12. $a=81^{0{,}28}\,\mathbf{cos}\,5-2^{-0{,}92}\,\mathbf{sin}\,5$; $b=\mathbf{sin}\left(3\mathbf{tg}\,5\,\mathbf{arccos}\dfrac{\sqrt{3}}{2}\right)^2$;

$m=\left|a+b\right|$.

13. $L=\dfrac{\mathbf{cos}\,5}{4-\sqrt{11}+\sqrt[9]{7}}\cdot\dfrac{3}{4+\dfrac{5}{13}}$; $b=2\left(\mathbf{sin}\,\dfrac{5}{13}+\mathbf{cos}\,\dfrac{12}{13}\right)\mathbf{ln}\,3$;

$s=\sqrt{l^2+4b}$.

14. $y=e^{-bt}\,\mathbf{sin}(at+b)-\sqrt{bt+a}$; $z=\dfrac{\mathbf{sin}\,t+\mathbf{sin}\,y}{\sqrt{1+a^2\,\mathbf{ln}\,bt}-\mathbf{ln}(b-a)}$,

де $a=0{,}5$; $b=1{,}05$; $t=0{,}7$.

15. $n=\sqrt[10]{10+\sqrt[10]{10}}\;\mathbf{tg}\,0{,}4$; $m=\left(1+\sqrt[5]{\mathbf{lg}\,20}\right)^{9{,}2}$;

$k=\mathbf{sin}(\pi n+e)^m$.

16. $U=e^{x+y+z}$,

де $x=\dfrac{a+1}{a^2+\sqrt{1+2a}}$; $y=\dfrac{a^2+1}{a^4+\sqrt{1+2a^2}}$, $z=\dfrac{\mathbf{sin}\,a+1}{\mathbf{sin}^2\,a+\sqrt{1+2\,\mathbf{sin}\,a}}$, $a=0{,}4$.

17. $A=0{,}75\sqrt{0{,}5}-\dfrac{1}{2}\sqrt[9]{4}$; $B=100^{\frac{1}{2}\mathbf{ln}\,9-\mathbf{lg}\,2}\,\mathbf{tg}\dfrac{1}{3}$;

$C=\sqrt{15A^2+21B^2}$.

18. $R=19{,}7^{-0{,}18}-7{,}3^{0{,}8\sqrt[3]{2{,}87}}\,\mathbf{sin}\,0{,}15$; $M=-\mathbf{lg}(1{,}3e^{-0{,}5})$;

$S=\left|R-M\right|$.

19. $N=\dfrac{4-0{,}0186^2}{\sqrt{0{,}1}-\sqrt{10}}$; $M=\mathbf{sin}(1+\sqrt[9]{\mathbf{lg}\,4})$;

$L=\sqrt{\left|N+M\right|}$.

20. $x=0{,}461^{0{,}461}\,\mathbf{sin}\,3-0{,}356^{0{,}956}\,\mathbf{cos}\,3$;

$y=(tg4)99^{\frac{1}{2}}-\mathbf{lg}\sqrt[4]{4}$; $z=\sqrt{\left|xe+\dfrac{y}{e}\right|}$.

21. $n = \sqrt{\dfrac{1{,}56 \cdot \sqrt[5]{0{,}14}\,\sin 0{,}6}{0{,}8942 \ln 3}}$; $m = \ln(3|2\sin 3 - 3\sin 2|)$;

$k = e^{2\operatorname{arctg} n + 9\operatorname{arctg} m}$.

22. $s = \sqrt{79{,}836 \ln 3 - \sqrt{156{,}374}\ln 5}$;

$r = e^2 \sin\left(3 arctg\sqrt{3} + 2\arccos\dfrac{1}{2}\right)$; $k = s - |r|$.

23. $z = \dfrac{\sin x}{\sqrt{1 + m^2 \sin x - \cos^2 mx}}$; $f = z(\sin x^2 + e^{-x-z})$,

де $x = 0{,}15$; $m = 0{,}3$.

24. $s = e^{-ax}\sqrt{x+1} + e^{-bx}\sqrt[9]{x+1{,}5}$; $y = \dfrac{bs^2 - a}{e^{ax} + s}$,

де $a = 0{,}5$; $b = 1$; $x = 0{,}3$.

25. $r = 22{,}5^{-0{,}5} - 7{,}5\left(0{,}4\sqrt[4]{2{,}87}\right)^{0{,}75}\cos 1$;

$m = -\lg\left(1{,}6^{\sqrt{1{,}2}}\, e^3\right)$; $s = \dfrac{4r + 3m}{r^2 + m^2}$.