

Контрольная работа №2. Производная, дифференциал.

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|-----|---|-----------------------------------|--|---|--|
| 1. | $y = \frac{x^7}{7} - \frac{x^6}{6}$ | 25. | $y = \sqrt{\operatorname{tg} x} + \sqrt{\operatorname{tg} \alpha}$ | 42. | $z = \frac{x - y}{x + y}$ |
| 2. | $y = \sqrt[4]{x}$ | 26. | $y = \sqrt{x e^x}$ | 43. | $z = \frac{y}{x}$ |
| 3. | $y = \frac{x^5}{5} - \frac{1}{x^2}$ | 27. | $y = \sin\left(\frac{x}{\pi} + \frac{x^2}{\pi^2}\right)$ | 44. | $z = \sqrt{x^2 - y^2}$ |
| 4. | $y = \sqrt[3]{x}$ | 28. | $y = \frac{1}{3 \cos^2 x} - \frac{1}{\cos x}$ | 45. | $z = \frac{x}{\sqrt{x^2 + y^2}}$ |
| 5. | $y = 5\sqrt[5]{x}$ | 29. | $y = \sqrt[3]{e^x - \frac{x^3}{3}}$ | 46. | $z = \ln\left(x + \sqrt{x^2 + y^2}\right)$ |
| 6. | $y = \frac{x^{25}}{100} + x$ | 30. | $y = \ln \sin x$ | 47. | $z = \operatorname{tg} \frac{y}{x}$ |
| 7. | $y = 32 - x + x^6$ | 31. | $y = \sin^3 5x \cos^2 \frac{x}{3}$ | 48. | $z = x^y$ |
| 8. | $y = e^x + \cos x$ | 32. | $y = -\frac{11}{2(x-2)^2} - \frac{4}{x-2}$ | 49. | $z = \frac{x + y}{\sqrt{x + 1}}$ |
| 9. | $y = \operatorname{tg} x + 3x$ | 33. | $y = \frac{x^8}{8(1-x^2)^4}$ | 50. | $z = x\sqrt{x^2 + y^2}$ |
| 10. | $y = \operatorname{ctg} x + 2$ | 34. | $y = \frac{x^3}{3\sqrt{(1+x^2)^3}}$ | Найти производную 2-го порядка следующих функций: | |
| 11. | $y = x^2 e^x$ | 35. | $y = \frac{3}{2}\sqrt[3]{x^2} + \frac{18}{7}x\sqrt[6]{x}$ | 51. | $y = x^8 + 7x^6 - 5x + 4$ |
| 12. | $y = \frac{x^2 + 1}{x^2 - 1}$ | 36. | $y = \frac{1}{8}\sqrt[3]{(1 + 3x^4)^8}$ | 52. | $y = e^{x^2}$ |
| 13. | $y = \frac{\sqrt{x}}{x + 1}$ | 37. | $y = \frac{4}{3}\sqrt[4]{\frac{x-1}{x+1}}$ | 53. | $y = \sin^2 x$ |
| 14. | $y = (x^2 - 1)e^x$ | 38. | $y = \left(\frac{a + bx^n}{a - bx^n}\right)^m$ | 54. | $y = \ln(1 + x^2)$ |
| 15. | $y = x \operatorname{tg} x$ | 39. | $y = (a + x)\sqrt[3]{(a - x)}$ | 55. | $y = (1 + x^2)e^x$ |
| 16. | $y = x^2(\cos x - \sin x)$ | 40. | $y = \sqrt[3]{x + \sqrt{x}}$ | 56. | $y = \frac{1}{1 + x}$ |
| 17. | $y = \frac{ax + b}{cx + d}$ | Найти частные производные функций | | 57. | $y = \frac{1 + x}{1 - x}$ |
| 18. | $y = \frac{e^x}{3x + 1}$ | 41. | $z = x^3 + y^3 - 3axy$ | 58. | $y = \ln(ax + b)$ |
| 19. | $y = (x + 1)e^x$ | | | 59. | $y = \sqrt[5]{x - 5}$ |
| 20. | $y = x^5 \cos x$ | | | 60. | $y = (1 - x^2) \cos x$ |
| 21. | $y = (ax^2 + bx + c)^3$ | | | | |
| 22. | $y = (3 + 2x^2)^4$ | | | | |
| 23. | $y = \sqrt{1 - x^2}$ | | | | |
| 24. | $y = \operatorname{tg} x - \frac{1}{3} \operatorname{tg}^3 x$ | | | | |

Соответствие номеров заданий вариантам

Вариант	№1	№2	№3	№4	№5	№6
1	1	20	21	40	41	60
2	2	19	22	39	42	59
3	3	18	23	38	43	58
4	4	17	24	37	44	57
5	5	16	25	36	45	56
6	6	15	26	35	46	55
7	7	14	27	34	47	54
8	8	13	28	33	48	53
9	9	12	29	32	49	52
10	10	11	30	31	50	51
11	1	19	30	32	47	52
12	2	20	29	31	46	53
13	3	17	28	33	45	54
14	4	18	27	34	44	55
15	5	15	26	35	43	56
16	6	16	25	36	42	57
17	7	13	24	37	41	58
18	8	14	23	38	50	59
19	9	11	22	39	49	60
20	10	12	21	40	48	51
21	1	16	29	34	46	52
22	2	17	28	35	47	53
23	3	18	27	36	44	54
24	4	19	26	37	43	55
25	5	20	25	38	42	56