Zadanie 1. Wyznacz pochodną podanych funkcji

(1) $\left[6x^8 + x^6 + 4x^3 - 2x + 1\right]' =$

(2) $\left[7x + \dfrac{2}{x} - \dfrac{3}{x^2} + \dfrac{5}{x^5}\right]' =$

(3) $\left[5x^6 + \sin x - 9x + \cos x\right]' =$

(4) $\left[\sin x + 2\cos x - 4\operatorname{arc\,ctg} x\right]' =$

(5) $\left[\arcsin x + x^3 + \sqrt[4]{x^3}\right]' =$

(6) $\left[\dfrac{4}{7}\sqrt[5]{x^4} + x\right]' =$

(7) $\left[2\sqrt{x} - 5\sqrt[3]{x^2} + \dfrac{2}{x} - \dfrac{4}{x^3}\right]' =$

(8) $\left[\dfrac{2}{3}\sqrt{x^5} - \dfrac{1}{\sqrt[3]{x^4}}\right]' =$

(9) $\left[\dfrac{3}{10}x^{100} - \sqrt{4x}\right]' =$

(10) $\left[\sqrt[9]{x^5} + \sqrt[5]{x^3} - \dfrac{1}{\sqrt[3]{x^2}}\right]' =$

(11) $\left[4x^5\sqrt[3]{x}\right]' =$

(12) $\left[5x\sqrt{x} + 2x^2\sqrt[3]{x}\right]' =$

(13) $\left[x^3\left(3\sqrt{x} + \dfrac{2}{x}\right)\right]' =$

(14) $\left[\left(2x^2 + \dfrac{1}{x}\right)\left(\dfrac{3}{\sqrt{x}} + 1\right)\right]' =$

(15) $\left[\sin x \cdot \cos x\right]' =$

(16) $\left[(x^2 - 3x)\sin x\right]' =$

(17) $\left[\sqrt{x}\operatorname{ctg} x\right]' =$

(18) $\left[(\sqrt{x} - 2x)\operatorname{arc\,tg} x\right]' =$

(19) $\left[\dfrac{3\sqrt{x}}{x^3\sqrt[3]{x}}\right]' =$

(20) $\left[\dfrac{3x^6 + 2x^2 - 3x + 1}{x^2}\right]' =$

(21) $\left[\dfrac{4\sqrt{x} + 3x - 4x^2}{\sqrt{x}}\right]' =$

(22) $\left[\dfrac{x^2 + \sqrt{x}}{\sqrt[4]{x^3}}\right]' =$

(23) $\left[\dfrac{10}{5x^4 + 3x^2 - 7x}\right]' =$

(24) $\left[\dfrac{5x^6}{-3x^3 + x}\right]' =$

(25) $\left[\dfrac{2x + 1}{3x - 2}\right]' =$

(26) $\left[\dfrac{\sqrt[3]{x}}{4 + \sqrt[3]{x}}\right]' =$

(27) $\left[\dfrac{\sqrt{x} - x}{4x^3 - x}\right]' =$

(28) $\left[\dfrac{4x^3 - 2x + 1}{7x - 4}\right]' =$

(29) $\left[\dfrac{x^4}{\sin x}\right]' =$

(30) $\left[\dfrac{\arcsin x}{\arccos x}\right]' =$

(31) $\left[\dfrac{\operatorname{tg} x}{x + 1}\right]' =$

(32) $\left[\dfrac{1}{\cos x}\right]' =$

(33) $\left[\cos(4x) + 2\operatorname{arc\,tg}(7x)\right]' =$

(34) $\left[\sin(3x^3 + 3)\right]' =$

(35) $\left[\arcsin(6x^2) + \sin\sqrt{x}\right]' =$

(36) $\left[3\operatorname{arc\,tg}(x^3) + \operatorname{tg}(8x^3)\right]' =$

(37) $\left[\cos^2 x + \operatorname{arc\,tg}^2 x\right]' =$

(38) $\left[\sin(\cos(x^3))\right]' =$

(39) $\left[\sin^3(4x^3)\right]' =$

(40) $\left[\left(\operatorname{arc\,tg}(7x^2 + \sqrt{x}) + 2\right)^4\right]' =$

(41) $\left[(8x^3 - 1)\operatorname{ctg}\sqrt{x}\right]' =$

(42) $\left[\sqrt[3]{3x}\arccos(4x + 1)\right]' =$

(43) $\left[\cos(x^2)\operatorname{tg}(4x)\right]' =$

(44) $\left[\dfrac{\operatorname{arc\,tg}(4x)}{\operatorname{tg}(3x)}\right]' =$

(45) $\left[\dfrac{\sqrt{x}}{\sin(x^2)}\right]' =$

(46) $\left[\sin\left(\dfrac{\sqrt{x}}{x + 1}\right)\right]' =$

(47) $\left[\cos(x \cdot \operatorname{arc\,tg} x)\right]' =$

(48) $\left[\operatorname{tg}^3(\operatorname{ctg} x)\right]' =$

(49) $\left[\sqrt{\cos x + 3x - \dfrac{1}{x^2}}\right]' =$

(50) $\left[\sqrt[3]{\dfrac{x - 2}{x^2 + x}}\right]' =$

Zadanie 2. Oblicz podane całki

(1) $\int (7x^2 + x + 1)\, dx =$

(2) $\int (8x^3 - \dfrac{1}{x^2} + \dfrac{3}{x^5})\, dx =$

(3) $\int (3\sqrt[3]{x^2} + \dfrac{2}{x^3} - 2x\sqrt{x})\, dx =$

(4) $\int_0^1 (x + \sqrt[3]{x^2})\, dx =$

(5) $\int_1^4 (2x^2 + \dfrac{2}{\sqrt{x}})\, dx =$

(6) $\int \dfrac{x^5 - 3x^3 + 4x}{x^3}\, dx =$

(7) $\int \dfrac{\sqrt{x} + 4x - \sqrt[3]{x}}{x}\, dx =$

(8) $\int \dfrac{x^2 - \sqrt{x}}{\sqrt[3]{x}}\, dx =$

(9) $\int (x^2 - 4)\sqrt{x}\, dx =$

(10) $\int \sqrt{x\sqrt{x\sqrt[3]{x}}}\, dx =$

(11) $\int_0^{1/2} \dfrac{4}{\sqrt{1 - x^2}}\, dx =$

(12) $\int_{-\pi}^0 (\cos 3x + 2)\, dx =$

(13) $\int \dfrac{x^2}{x^2 + 1}\, dx =$

(14) $\int \left(\dfrac{3}{\sin^2 x} - \dfrac{2}{\cos^2 x} \right)\, dx =$

(15) $\int \dfrac{5}{\sqrt{1 - x^2}}\, dx =$

(16) $\int \cos(3 - 2x)\, dx =$

(17) $\int (5 - 3x)^{30}\, dx =$

(18) $\int \dfrac{x}{(4 + x^2)^5}\, dx =$

(19) $\int_1^2 2x\sqrt{3x^2 - 2}\, dx =$

(20) $\int \dfrac{\sin\sqrt{x}}{\sqrt{x}}\, dx =$

(21) $\int \left(\cos(3x) + x\sqrt[4]{x^3} \right)\, dx =$

(22) $\int \dfrac{4}{x^2 + 1}\, dx =$

(23) $\int_{-1}^2 \dfrac{x^3}{(x^4 + 1)^2}\, dx =$

(24) $\int_{-1}^2 2x^2 \sqrt[3]{x^3 + 1}\, dx =$

(25) $\int \dfrac{1}{4x^2 + 1}\, dx =$

(26) $\int \dfrac{1}{x^2 + 4}\, dx =$

(27) $\int \sin x \cos^3 x\, dx =$

(28) $\int \sin^7 x \cos x\, dx =$

(29) $\int \sin^2 x \cos^3 x\, dx =$

(30) $\int_{\pi/6}^{\pi/3} \sin^3 x \cos x\, dx =$

(31) $\int \dfrac{\cos x}{\sin^3 x}\, dx =$

(32) $\int \dfrac{\operatorname{ctg} x}{\sin x}\, dx =$

(33) $\int x^2 \sin x\, dx =$

(34) $\int (3x^2 - x)\cos 2x\, dx =$

(35) $\int_{-\pi/2}^{\pi/2} x^2 \cos x\, dx =$

(36) $\int_0^\pi x(1 + \cos x)\, dx =$

(37) $\int_0^{\pi/4} x \sin 2x\, dx =$

(38) $\int \sin 4x \cdot \cos 2x\, dx =$

(39) $\int x^2 \operatorname{arc\,tg} x\, dx =$

(40) $\int x \sin x \cos x\, dx =$