Deriválja a következő függvényeket!

1.
$$f(x) = \frac{\sqrt[3]{x^2 + x^5 - \sqrt{x}}}{x^2}$$
 2. $f(x) = 2x + \frac{x - 1}{x} + \frac{1}{\sqrt[3]{x^7}}$

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$$f(x) = 2x + \frac{x-1}{x} + \frac{1}{\sqrt[3]{x^7}}$$

3.

$$f(x) = \frac{x-4}{x-2} + arctg \ x$$

4.
$$f(x) = (e^x + 3)\sin x$$
 5. $f(x) = \frac{\ln x}{x^2}$

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6.
$$f(x) = \lg x(x^2 + 6x + 1)$$

7.
$$f(x) = e^{2x} + 3^{2-x} + \frac{1}{10^{3x}}$$

8.
$$f(x) = \sin 2x + \sin^2 x + \sin \left(\frac{x}{2} + 2\right)$$

9.
$$f(x) = x^2 arctg \sqrt{x} + \arcsin \frac{3x-2}{5}$$

9.
$$f(x) = x^2 a r c t g \sqrt{x} + \arcsin \frac{3x - 2}{5}$$
 10. $f(x) = \cos^2(2x - 6) + \sin^3(\sqrt{x} - 1) + t g(x - 7)^2$

11.
$$f(x) = \frac{e^x + e^{-x}}{e^x - e^{-x}}$$

12.
$$f(x) = \sqrt{\frac{x+1}{x-1}}$$

$$13. \ f(x) = \ln \cos x$$

14.
$$f(x) = \frac{\sqrt[3]{x^2}}{2^{\cos^2 x}} + tg \frac{\pi}{4}$$

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 15. $f(x) = \frac{tg^2 2x}{x-1} + \sqrt{shx}$ 16. $f(x) = \frac{1}{2\pi} \cdot e^{-\frac{x^3}{4}}$

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17.
$$f(x) = \sin^2(\sqrt{x} \cdot e^{-x})$$
 18. $f(x) = \log_2 \sqrt{\frac{x+5}{x+7}}$

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19.
$$f(x) = e^{x^2 + 5x + 1} \ln x$$

20.
$$f(x) = \sqrt{x + \sqrt{x + \sqrt{x}}}$$
 21. $f(x) = \ln \sqrt{\frac{e^{2x}}{1 + e^{2x}}}$

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$$22. \ f(x) = x^2 + 3x^4 + 5\sqrt{x}$$

22.
$$f(x) = x^2 + 3x^4 + 5\sqrt{x}$$
 23. $f(x) = 1 - \frac{1}{x} + \frac{x^2}{2} - \frac{1}{3x^3}$ 24. $f(x) = \frac{5}{\sqrt[3]{x^2}} - \frac{\sqrt[4]{x^3}}{3}$

24.
$$f(x) = \frac{5}{\sqrt[3]{x^2}} - \frac{\sqrt[4]{x^3}}{3}$$

25.
$$f(x) = (x+2) \cdot e^x$$

26.
$$f(x) = \frac{3-x}{5x+1} + \frac{3}{x}$$
 27. $f(x) = thx \cdot \ln x$

$$27. \ f(x) = thx \cdot \ln x$$

28.
$$f(x) = \frac{4x^2 \operatorname{archx}}{e^x + 3}$$

 $f(x) = (3^x + 2 \cdot 4^x) \cdot 5^{3x}$

29.
$$f(x) = (2x-1)^2 + e^{2x} - \cos 2x$$
 30.

31.
$$f(x) = tgx(e^{3x} + 7)$$

32.
$$f(x) = 3e^{2x} \sin 2x$$

31.
$$f(x) = tgx(e^{3x} + 7)$$
 32. $f(x) = 3e^{2x} \sin 2x$ 33. $f(x) = (9 - x^2)(e^{x^2} + 1)$

34.
$$f(x) = arctg(x-3) + 7$$
 35. $f(x) = 2^{\sin x} - 3^{\cos x}$

35.
$$f(x) = 2^{\sin x} - 3^{\cos x}$$

$$36. \ f(x) = \frac{x^4 - 3x + 2\sqrt{x}}{\sqrt[3]{x}}$$

37.
$$f(x) = (\sqrt{5} - 3x) \cdot \arcsin x$$
 38. $f(x) = \frac{1}{\cos x}$ 39. $f(x) = \frac{x}{1 - \ln x}$

$$38. \ f(x) = \frac{1}{\cos x}$$

39.
$$f(x) = \frac{x}{1 - \ln x}$$

40.
$$f(x) = \frac{(x-1)^3}{3x^2}$$

41.
$$f(x) = \frac{3x \cdot \arccos x}{x^2 + 1}$$
 42. $f(x) = tg^2 \frac{x}{4} + \pi$

42.
$$f(x) = tg^2 \frac{x}{4} + \pi$$

43.
$$f(x) = \sin 2x + \sin^2 x$$

44.
$$f(x) = \cos^3 x + \cos x^3$$
 45. $f(x) = e^{x^2 + 5x + 1} \cdot \ln x$

45.
$$f(x) = e^{x^2 + 5x + 1} \cdot \ln x$$

46.
$$f(x) = \frac{\sqrt[5]{x}}{\sin x} + \frac{e^2}{e^x + 1}$$

47.
$$f(x) = \ln \sin \sqrt{x}$$

47.
$$f(x) = \ln \sin \sqrt{x}$$
 48. $f(x) = x^2 \cdot e^x \cdot \sin x$

Összeállította: Kovács Judit