

1.  $x - \operatorname{sen} x$
2.  $\sqrt[3]{x} - x + \ln x$
3.  $\operatorname{sen} x \cdot \ln x$
4.  $\sqrt{x} - \frac{1}{\sqrt{x}} + \frac{1}{x}$
5.  $\frac{\pi}{x} + \ln 2$
6.  $x^2 \cdot \operatorname{sen} x$
7.  $\ln x \cdot \frac{x+1}{e^x}$
8.  $\arccos(x^2 - 1)$
9.  $\sqrt{3x^2 - x}$
10.  $(x^2 + x) \cdot \operatorname{tg} x$
11.  $\operatorname{sen}(3x^2 + 2)$
12.  $\frac{\operatorname{sen} x + \cos x}{\operatorname{sen} x - \cos x}$
13.  $x^3 \cdot \ln x - \frac{x^4}{4}$
14.  $\operatorname{tg}^4(x^5)$
15.  $\sqrt[3]{(x+3)^2}$
16.  $\frac{x^2}{x^2 - 1}$
17.  $\frac{e^x - 1}{x}$
18.  $\cos(\operatorname{tg} x)$
19.  $\ln(x^2 - x)$
20.  $\ln \sqrt{\frac{1 + \cos x}{1 - \cos x}}$
21.  $e^{\operatorname{tg} x}$
22.  $\frac{\ln x}{x}$
23.  $\ln(\cos x)$
24.  $\frac{x}{(x-1)^2}$
25.  $\operatorname{arctg}(\sqrt{x})$
26.  $3^x \cdot x^3$
27.  $\operatorname{sen} x + \frac{1}{\operatorname{sen} x}$
28.  $\frac{\sqrt{x}}{x-1}$
29.  $e^{\frac{1}{x^2}}$
30.  $\operatorname{cot} g(\sqrt[3]{x^2 - 1})$
31.  $\arccos(\sqrt{2x})$
32.  $\sqrt{x + \sqrt{x}}$
33.  $\sqrt[3]{\frac{x^2 - 1}{x^2 + 1}}$
34.  $\cos^4(e^x + 1)$
35.  $\frac{e^x + e^{-x}}{e^x - e^{-x}}$
36.  $\log_2 \sqrt{\operatorname{tg} x}$
37.  $\left(\frac{\operatorname{sen} x}{x}\right)^x$
38.  $\operatorname{sen} x^2 + 3 \cos^2 x$
39.  $e^x \cdot \log_4 x^5$
40.  $\sqrt[x]{x^3}$
41.  $\left(1 + \frac{1}{x}\right)^x$
42.  $\ln(\operatorname{sen} x^2)$
43.  $\operatorname{arctg}\left(\frac{1}{x}\right)$
44.  $(1 + x^2) \operatorname{arctg} x$
45.  $\frac{2x-1}{x-x^2}$
46.  $\frac{x \cos x}{e^x}$
47.  $\ln\left(\frac{1 - \cos x}{1 + \cos x}\right)$
48.  $\operatorname{arcsen} \sqrt{1 - x^2}$
49.  $\operatorname{arctg} 2^x$
50.  $\operatorname{sen}(\cos(\operatorname{sen} x))$
51.  $\ln \frac{1}{1+x} + \frac{1}{1+x}$
52.  $\frac{x}{\sqrt{a^2 - x^2}}$
53.  $x^{\ln x}$



## Soluciones:

1.  $1 - \cos x$
2.  $\frac{1}{3\sqrt[3]{x^2}} - 1 + \ln x$
3.  $\cos x \cdot \ln x + \frac{\operatorname{sen} x}{x}$
4.  $\frac{1}{2\sqrt{x}} + \frac{1}{2x\sqrt{x}} - \frac{1}{x^2}$
5.  $-\frac{\pi}{x^2}$
6.  $2x \operatorname{sen} x + x^2 \cos x$
7.  $\frac{x+1-x^2 \ln x}{x e^x}$
8.  $\frac{-2}{\sqrt{2-x^2}}$
9.  $\frac{6x-1}{2\sqrt{3x^2-x}}$
10.  $(2x+1) \operatorname{tg} x + \frac{x^2+x}{\cos^2 x}$
11.  $6x \cos(3x^2+2)$
12.  $\frac{-2}{(\operatorname{sen} x - \cos x)^2}$
13.  $x^2(3 \ln x + 1) - x^3$
14.  $\frac{20x^4 \operatorname{tg}^3(x^5)}{\cos^2(x^5)}$
15.  $\frac{2}{3\sqrt[3]{x+3}}$
16.  $\frac{-2x}{(x^2-1)^2}$
17.  $\frac{x e^x - e^x + 1}{x^2}$
18.  $\frac{-\operatorname{sen}(\operatorname{tg} x)}{\cos^2 x}$
19.  $\frac{2x-1}{x^2-x}$
20.  $\frac{-1}{\operatorname{sen} x}$
21.  $\frac{e^{\operatorname{tg} x}}{\cos^2 x}$
22.  $\frac{1-\ln x}{x^2}$
23.  $-\operatorname{tg} x$
24.  $\frac{-x-1}{(x-1)^3}$
25.  $\frac{1}{2\sqrt{x}(x+1)}$
26.  $3^x \ln 3 x^3 + 3x^2 3^x$
27.  $\frac{-\cos^3 x}{\operatorname{sen}^2 x}$
28.  $\frac{-x-1}{2\sqrt{x}(x-1)^2}$
29.  $\frac{-2e^{\frac{1}{x^2}}}{x^3}$
30.  $\frac{-2x}{3\sqrt[3]{(x^2-1)^2} \cdot \operatorname{sen}^2(\sqrt[3]{x^2-1})}$
31.  $\frac{1}{\sqrt{1-2x}\sqrt{2x}}$
32.  $\frac{2\sqrt{x+1}}{4\sqrt{x^2+x}\sqrt{x}}$
33.  $\frac{4x}{3(x^2+1)^2} \sqrt[3]{\left(\frac{x^2+1}{x^2-1}\right)^2}$
34.  $-4e^x \cos^3(e^x+1) \operatorname{sen}(e^x+1)$
35.  $\frac{-4}{(e^x - e^{-x})^2}$
36.  $\frac{1}{\ln 2 \cdot 2 \operatorname{sen} x \cos x} = \frac{1}{\ln 2 \cdot \operatorname{sen} 2x}$
37.  $(\ln(\operatorname{sen} x) - \ln x + x \cdot \cot g x - 1) \left(\frac{\operatorname{sen} x}{x}\right)^x$
38.  $2x \cos x^2 - 6 \operatorname{sen} x \cos x$
39.  $5e^x \log_4 x + \frac{5e^x}{x \ln 4}$
40.  $\frac{3(1-\ln x)}{x^2} \sqrt[x]{x^3}$
41.  $\left(\ln\left(1+\frac{1}{x}\right) - \frac{1}{x+1}\right) \left(1+\frac{1}{x}\right)^x$
42.  $2x \cot g x^2$
43.  $\frac{-1}{x^2+1}$
44.  $2x \operatorname{arctg} x + 1$
45.  $\frac{2x^2-2x+1}{(x-x^2)^2}$
46.  $\frac{\cos x - x \operatorname{sen} x - x \cos x}{e^x}$
47.  $\frac{2}{\operatorname{sen} x}$
48.  $\frac{-1}{\sqrt{1-x^2}}$
49.  $\frac{2^x \ln 2}{1+2^{2x}}$
50.  $-\cos(\cos(\operatorname{sen} x)) \operatorname{sen}(\operatorname{sen} x) \cos x$
51.  $\frac{-2-x}{(1+x)^2}$
52.  $\frac{a^2}{(a^2-x^2)\sqrt{a^2-x^2}}$
53.  $\frac{2 \ln x}{x} x^{\ln x}$

