

$$\begin{aligned}
 27 \quad y &= \sqrt{\operatorname{arc} \operatorname{sen} x} && \left[\frac{1}{2\sqrt{(1-x^2)} \operatorname{arc} \operatorname{sen} x} \right] \\
 28 \quad y &= \log \sqrt{\operatorname{arc} \operatorname{tg} 2x} && \left[\frac{1}{(1+4x^2) \operatorname{arc} \operatorname{tg} 2x} \right] \\
 29 \quad y &= e^{\operatorname{arc} \operatorname{tg} x} + \sqrt{\operatorname{arc} \operatorname{tg} x} && \left[\frac{1}{1+x^2} \left(e^{\operatorname{arc} \operatorname{tg} x} + \frac{1}{2\sqrt{\operatorname{arc} \operatorname{tg} x}} \right) \right] \\
 30 \quad y &= 2 \operatorname{arc} \operatorname{tg} \frac{1-\cos x}{\operatorname{sen} x} && [1]
 \end{aligned}$$

Esercizi di ricapitolazione sulle derivate

Derivare le seguenti funzioni:

$$\begin{aligned}
 1 \quad y &= \frac{2x}{x^2-1} - \frac{6x+1}{3x^2} && \left[\frac{2(x^4-9x^3-2x^2+3x+1)}{3x^3(x^2-1)^2} \right] \\
 2 \quad y &= \frac{x-2}{\sqrt[4]{x-2}} && \left[\frac{3}{4\sqrt[4]{x-2}} \right] \\
 3 \quad y &= \sqrt{\frac{x+2}{3x}} && \left[-\frac{1}{|x|\sqrt{3x(x+2)}} \right] \\
 4 \quad y &= x \sqrt{4-\frac{1}{x^2}} \cdot \sqrt{1-\frac{2x}{2x+1}} && \left[\frac{1}{\sqrt{2x-1}} \right] \\
 5 \quad y &= \frac{\sqrt{2-x^2}}{x} && \left[\frac{-2}{x^2\sqrt{2-x^2}} \right] \\
 6 \quad y &= (x^2-2x-1)\sqrt{x^2+2x-1} && \left[\frac{3x^3+x^2-9x+1}{\sqrt{x^2+2x-1}} \right] \\
 7 \quad y &= \operatorname{sen} 2\sqrt{x} + 2\sqrt{\operatorname{sen} x} && \left[\frac{\cos 2\sqrt{x}}{\sqrt{x}} + \frac{\cos x}{\sqrt{\operatorname{sen} x}} \right] \\
 8 \quad y &= \log(x^2-3x+1)^2 && \left[\frac{2(2x-3)}{x^2-3x+1} \right] \\
 9 \quad y &= \log \frac{1-x}{1+x} - 2 \log(1-x^2) && \left[\frac{2(2x-1)}{1-x^2} \right] \\
 10 \quad y &= \log \frac{2 \cos^2 x + \operatorname{sen} x - 2}{1-2 \operatorname{sen} x} && [\cotg x] \\
 11 \quad y &= \operatorname{tg} e^{x^2+3} && \left[\frac{2x e^{x^2+3}}{\cos^2 e^{x^2+3}} \right] \\
 12 \quad y &= \log_a(x^2+3) && \left[\frac{2x \log_a e}{x^2+3} \right] \\
 13 \quad y &= \log \operatorname{sen} \sqrt{2x+1} && \left[\frac{1}{\sqrt{2x+1}} \cotg \sqrt{2x+1} \right] \\
 14 \quad y &= \sqrt{\frac{\operatorname{sen}^2 x + \operatorname{tg} x}{\operatorname{sen} 2x}} && \left[\frac{2 \operatorname{sen} x + \cos x}{2 \cos x |\cos x| \sqrt{2 + \operatorname{sen} 2x}} \right]
 \end{aligned}$$

Derivate

- 15 $y = \frac{\cos x}{1 + \cos^2 x}$. $\left[\frac{-\operatorname{sen}^3 x}{(1 + \cos^2 x)^2} \right]$
- 16 $y = \frac{x}{\sqrt{1+x}}$. $\left[\frac{2+x}{2\sqrt{(1+x)^3}} \right]$
- 17 $y = \frac{\log^2 x}{x^2 - x \log x}$. $\left[\frac{\log x (2x - \log x) (1 - \log x)}{x^2 (x - \log x)^2} \right]$
- 18 $y = \frac{3}{\sqrt[3]{2+x^2}}$. $\left[\frac{-2x}{\sqrt[3]{(2+x^2)^4}} \right]$
- 19 $y = \frac{\sqrt{x+1} - \sqrt{x-1}}{\sqrt{x+1} + \sqrt{x-1}}$. $\left[\frac{\sqrt{x^2-1} - x}{\sqrt{x^2-1}} \right]$
- 20 $y = \log_x 5$.
 (ricordare che $\log_a N = \frac{\log N}{\log a} \dots$). $\left[-\frac{\log 5}{x \log^2 x} \right]$
- 21 $y = \log_x (x+1)$
 (vedi esercizio precedente). $\left[\frac{1}{\log^2 x} \left(\frac{\log x}{x+1} - \frac{\log(x+1)}{x} \right) \right]$
- 22 $y = \log_{\log x} x$. $\left[\frac{\log \log x - 1}{x \log^2 \log x} \right]$
- 23 $y = \frac{1 + \operatorname{tg}^2 x}{1 + \operatorname{cotg}^2 x}$. $[2 \operatorname{tg} x (1 + \operatorname{tg}^2 x)]$
- 24 $y = \left(\frac{2x}{3a-x} \right)^{\frac{3}{2}}$. $\left[\frac{9a \sqrt{2x(3a-x)}}{(3a-x)^3} \right]$
- 25 $y = \frac{\operatorname{sen}^2 x + \operatorname{tg} x}{\operatorname{sen} 2x}$. $\left[\frac{2 \operatorname{sen} x + \cos x}{2 \cos^3 x} \right]$
- 26 $y = \log \frac{1 + \operatorname{cotg} x}{1 - \operatorname{cotg} x}$. $\left[\frac{2}{\cos 2x} \right]$
- 27 $y = \sqrt{\frac{x \operatorname{sen} x}{1 - \cos x}}$. $\left[\frac{\operatorname{sen} x - x}{2 \operatorname{sen} \frac{x}{2} \sqrt{2x \operatorname{sen} x}} \right]$
- 28 $y = \frac{\operatorname{tg} 2x}{\operatorname{tg} x}$. $\left[\frac{2 \operatorname{sen} 2x}{\cos^2 2x} \right]$
- 29 $y = \sqrt{\frac{1 + \operatorname{sen} x}{1 - \operatorname{sen} x}}$. $\left[\frac{\cos x}{|\cos x|} \cdot \frac{1}{1 - \operatorname{sen} x} \right]$
- 30 $y = \sqrt{x} \operatorname{sen} x + x \cos x$. $\left[\frac{\sqrt{x} - 2x^2}{2x} \operatorname{sen} x + (1 + \sqrt{x}) \cos x \right]$
- 31 $y = \operatorname{sen} (x - \sqrt{x})$. $\left[\left(1 - \frac{1}{2\sqrt{x}} \right) \cos (x - \sqrt{x}) \right]$
- 32 $y = \cos (x + \sqrt{x})$. $\left[-\left(1 + \frac{1}{2\sqrt{x}} \right) \operatorname{sen} (x + \sqrt{x}) \right]$
- 33 $y = \frac{\operatorname{sen} (x - \alpha)}{a^x \cos x}$. $\left[\frac{\cos \alpha - \operatorname{sen} (x - \alpha) \cos x \log a}{a^x \cos^2 x} \right]$
- 34 $y = 2 \operatorname{arc} \operatorname{tg} x + \frac{4x+1}{2x^2}$. $\left[-\frac{(x+1)^2}{x^3 (1+x^2)} \right]$

- 35 $y = \frac{\sqrt{2}}{2} \operatorname{arc\,tg} \frac{\operatorname{tg} x}{\sqrt{2}} + \log(1 + \cos^2 x).$ $\left[\frac{(\operatorname{sen} x - \cos x)^2}{1 + \cos^2 x} \right]$
- 36 $y = \operatorname{arc\,tg} \frac{\operatorname{sen} x}{\sqrt{1 + \cos^2 x}} + \log(\cos x + \sqrt{1 + \cos^2 x}).$ $\left[\frac{\cos x - \operatorname{sen} x}{\sqrt{1 + \cos^2 x}} \right]$
- 37 $y = \log\left(1 + \operatorname{tg} \frac{x}{2}\right).$ $\left[\frac{1}{\operatorname{sen} x + \cos x + 1} \right]$
- 38 $y = \frac{x^2 \log x - x \log x + 1}{x \log x + 1}.$ $\left[\frac{x^2 \log^2 x + 2x \log x + x - 2 \log x - 2}{(x \log x + 1)^2} \right]$
- 39 $y = \operatorname{arctg}(\sqrt{2} \operatorname{sen} x) + \log \sqrt{\frac{1 + \sqrt{2} \operatorname{sen} x}{1 - \sqrt{2} \operatorname{sen} x}}.$ $\left[\frac{2\sqrt{2} \cos x}{1 - 4 \operatorname{sen}^4 x} \right]$
- 40 $y = x \operatorname{arc\,tg} x - \log \sqrt{1 + x^2}.$ $[\operatorname{arc\,tg} x]$
- 41 $y = \operatorname{arc\,tg} \frac{\operatorname{sen} x}{1 + \cos x}.$ $\left[\frac{1}{2} \right]$
- 42 $y = \log \frac{x-1}{\sqrt{x^2+x+1}} - \sqrt{3} \operatorname{arc\,tg} \frac{2x+1}{\sqrt{3}}.$ $\left[\frac{3}{x^3-1} \right]$
- 43 $y = \log \frac{\sqrt{1+x^2}}{x} - \frac{1}{2x^2}.$ $\left[\frac{1}{x^3(x^2+1)} \right]$
- 44 $y = e^x \log \cos \sqrt{x}.$ $\left[e^x \left\{ \log \cos \sqrt{x} - \frac{1}{2\sqrt{x}} \operatorname{tg} \sqrt{x} \right\} \right]$
- 45 $y = x \operatorname{arc\,sen} \sqrt{x} - \frac{1}{2} \operatorname{arc\,tg} \sqrt{\frac{x}{1-x}} + \frac{1}{2} \sqrt{x(1-x)}.$ $[\operatorname{arc\,sen} \sqrt{x}]$
- 46 $y = \sqrt{1 - e^{2 \cos x}} + \operatorname{arc\,sen} \sqrt{1 - e^{2 \cos x}}.$ $\left[\frac{\operatorname{sen} x \cdot e^{\cos x} (e^{\cos x} + 1)}{\sqrt{1 - e^{2 \cos x}}} \right]$
- 47 $y = \operatorname{arc\,tg} \left(1 - \frac{4x}{x^2 + 2x - 1} \right).$ $\left[\frac{2}{1+x^2} \right]$
- 48 $y = \operatorname{arc\,tg} \frac{3 \operatorname{tg} 2x + 4}{3 - 4 \operatorname{tg} 2x}.$ $[2]$
- 49 $y = \operatorname{arc\,tg} \frac{3x - x^3}{1 - 3x^2}.$ $\left[\frac{3}{x^2 + 1} \right]$
- 50 $y = \operatorname{arc\,tg} \frac{\operatorname{sen} x}{\cos^2 x}.$ $\left[\frac{\cos x (2 - \cos^2 x)}{\cos^4 x - \cos^2 x + 1} \right]$
- 51 $y = \operatorname{arc\,tg} \frac{2}{\cos^2 2x}.$ $\left[\frac{4 \operatorname{sen} 4x}{4 + \cos^4 2x} \right]$
- 52 $y = \operatorname{arc\,tg} \frac{1}{\sqrt{x^2 - 1}} + \sqrt{x^2 - 1}.$ $\left[\frac{\sqrt{x^2 - 1}}{x} \right]$
- 53 $y = \operatorname{arc\,tg} (1 + 2 \cos x) - \operatorname{arc\,tg} \frac{\cos x}{1 + \cos x}.$ $[0]$
- 54 $y = \frac{2 \operatorname{sen} x + 3x \cos x}{3 \operatorname{sen} x - 2x \cos x}.$ $\left[\frac{13(\operatorname{sen} x \cos x - x)}{(3 \operatorname{sen} x - 2x \cos x)^2} \right]$
- 55 $y = \operatorname{arc\,tg} \frac{2 - \cos x}{1 + \cos x} - \frac{3}{2} \log(2 \cos^2 x - 2 \cos x + 5).$ $\left[\frac{3 \operatorname{sen} 2x}{2 \cos^2 x - 2 \cos x + 5} \right]$

Derivate

- 56 $y = 4 \log x + \frac{x^2 - 8x + 1}{x - 2}$. $\left[\frac{x^3 - x + 16}{x(x-2)^2} \right]$
- 57 $y = \frac{\operatorname{sen}(x + 30^\circ)}{\operatorname{sen}(x - 45^\circ)}$. $\left[-\frac{\pi}{180} \frac{\sqrt{6} + \sqrt{2}}{4 \operatorname{sen}^2(x - 45^\circ)} \right]$
- 58 $y = \frac{\cos(x + 45^\circ)}{\cos(75^\circ - x)}$. $\left[-\frac{\sqrt{3} \pi}{360 \cos^2(75^\circ - x)} \right]$
- 59 $y = \operatorname{arc\,tg} x + \operatorname{arc\,tg} \frac{x^2 - x}{1 + x^3}$. $\left[\frac{2x}{1 + x^4} \right]$
- 60 $y = \operatorname{arc\,tg} \frac{x+1}{1-x} + \operatorname{arc\,tg} \frac{x+\sqrt{3}}{1-\sqrt{3}x} + \log \frac{1+x}{1-x}$. $\left[\frac{4}{1-x^4} \right]$
- 61 $y = x^{\frac{1}{x}}$. $\left[x^{\frac{1}{x}} \cdot \frac{1 - \log x}{x^2} \right]$
- 62 $y = (\operatorname{sen} x)^{\cos x}$. $\left[(\operatorname{sen} x)^{\cos x} \left\{ \frac{\cos^2 x}{\operatorname{sen} x} - \operatorname{sen} x \log \operatorname{sen} x \right\} \right]$
- 63 $y = 3^{\operatorname{sen} x} + 3^{x^2}$. $[\log 3 \{ 3^{\operatorname{sen} x} \cos x + 2x \cdot 3^{x^2} \}]$
- 64 $y = \log|x| + \frac{1}{3x^3}$. $\left[\frac{x^3 - 1}{x^4} \right]$
- 65 $y = \log(2x + \sqrt{1 + 4x^2})$. $\left[\frac{2}{\sqrt{1 + 4x^2}} \right]$
- 66 $y = 2x\sqrt{1 + 4x^2} + \log(2x + \sqrt{1 + 4x^2}) + 4$. $[4\sqrt{1 + 4x^2}]$
- 67 $y = x(x + 2) + 2[1 - \log(x - 2)^3]$. $\left[\frac{2(x^2 - x - 5)}{x - 2} \right]$
- 68 $y = \operatorname{arc\,sen} \sqrt{1 - \operatorname{tg}^4 x}$. $\left[-\frac{2 \operatorname{tg} x}{\sqrt{\cos 2x}} \right]$
- 69 $y = \operatorname{arc\,tg}(x\sqrt{2}) + \operatorname{arc\,tg} \frac{x(1 - \sqrt{2})}{1 + x^2\sqrt{2}}$. $\left[\frac{1}{1 + x^2} \right]$
- 70 $y = \log x^2 + 2\sqrt{x}$. $\left[\frac{2 + \sqrt{x}}{x} \right]$
- 71 $y = \log|x^2 - 1| + \log(x^2 + 1)$. $\left[\frac{4x^3}{x^4 - 1} \right]$
- 72 $y = \log [3(x + \sqrt{9 + x^2})]$. $\left[\frac{1}{\sqrt{9 + x^2}} \right]$
- 73 $y = e^x [1 + (x - 1)^2]$. $[x^2 e^x]$
- 74 $y = x \log_2 x$. $[\log_2 (ex)]$
- 75 $y = \log_3 x + \frac{2}{\log_x 3}$. $\left[\frac{3}{x \log 3} \right]$
- 76 $y = \log_x(x^2 + 1)$. $\left[\left(\frac{2x}{x^2 + 1} \log x - \frac{\log(x^2 + 1)}{x} \right) \frac{1}{\log^2 x} \right]$
- 77 $y = \log_x \operatorname{sen} x$. $\left[\frac{x \operatorname{cotg} x \log x - \log \operatorname{sen} x}{x \log^2 x} \right]$

Derivate

- 56 $y = \operatorname{sen} x (\operatorname{tg} x - 1) - \frac{1}{\cos x}$. [$\operatorname{sen} x - \cos x$]
- 57 $y = \frac{\log x}{x}$. [$\frac{1 - \log x}{x^2}$]
- 58 $y = \frac{1}{\log x}$. [$\frac{-1}{x \log^2 x}$]
- 59 $y = \frac{\sqrt{x}}{2x}$. [$-\frac{1}{4x \sqrt{x}}$]
- 60 $y = \frac{2x^2}{\sqrt{x}}$. [$3 \sqrt{x}$]
- 61 $y = \frac{1+x^2}{e^x}$. [$\frac{-(1-x)^2}{e^x}$]
- 62 $y = \frac{x + \operatorname{tg} x}{x - \operatorname{tg} x}$. [$\frac{2(x + x \operatorname{tg}^2 x - \operatorname{tg} x)}{(x - \operatorname{tg} x)^2}$]

Funzioni di funzioni

Derivare le seguenti funzioni:

- 1 $y = (3x - 1)^2$; $y = (1 + 2x^2)^3$. [$6(3x - 1)$; $12x(1 + 2x^2)^2$]
- 2 $y = (2x^2 - 3x + 1)^3$. [$3(4x - 3)(2x^2 - 3x + 1)^2$]
- 3 $y = (2x^2 + 3)^2 + (5x - 1)^3$. [$16x^3 + 375x^2 - 126x + 15$]
- 4 $y = (2x^3 + 3x - 1)^2 + (x^2 + 2x - 1)^3$. [$6x^2(5x^3 + 5x^2 + 14x - 4)$]
- 5 $y = (x^2 + x + 1)^2 - (2x + 1)^3$. [$2(2x + 1)(x^2 - 5x - 2)$]
- 6 $y = (2x + 3)^2(3 - 2x)^2$. [$16x(4x^2 - 9)$]
- 7 $y = (3 - 2x)^3 \cdot (2x + 3)^2$. [$-2(2x + 3)(3 - 2x)^2(10x + 3)$]
- 8 $y = (1 + 2x)(x - 3)^2(2 - 5x)^3$. [$(x - 3)(2 - 5x)^2(-60x^2 + 107x + 37)$]
- 9 $y = \frac{(x + 1)^3}{(x - 1)^2}$. [$\frac{(x + 1)^2(x - 5)}{(x - 1)^3}$]
- 10 $y = \frac{4}{(x^2 + 4)^2}$. [$\frac{-16x}{(x^2 + 4)^3}$]
- 11 $y = \operatorname{sen}^3 x$. [$3 \operatorname{sen}^2 x \cos x$]
- 12 $y = \operatorname{sen} x^3$. [$3x^2 \cos x^3$]

- 13 $y = \operatorname{sen}^2 x - (\operatorname{sen} x + \cos x)^2.$ $[\operatorname{sen} 2x - 2 \cos 2x]$
- 14 $y = (\cos 2x - \cos^2 x)^3.$ $[-6 \operatorname{sen}^5 x \cos x]$
- 15 $y = \operatorname{sen}(x^2 + 1) - \operatorname{tg} x^2.$ $\left[2x \cos(x^2 + 1) - \frac{2x}{\cos^2 x^2}\right]$
- 16 $y = x + \operatorname{sen} 2x \cos 2x.$ $[1 + 2 \cos 4x]$
- 17 $y = \operatorname{sen}^2 x \cdot \cos 2x.$ $[\operatorname{sen} 2x(1 - 4 \operatorname{sen}^2 x)]$
- 18 $y = \operatorname{tg} \frac{x}{2}.$ $\left[\frac{1}{1 + \cos x}\right]$
- 19 $y = \log(x^2 + 4).$ $\left[\frac{2x}{x^2 + 4}\right]$
- 20 $y = \log \cos x.$ $[-\operatorname{tg} x]$
- 21 $y = \log \operatorname{tg} x.$ $\left[\frac{1 + \operatorname{tg}^2 x}{\operatorname{tg} x}\right]$
- 22 $y = \log(x^4 + 4x^2 + 2).$ $\left[\frac{4x^3 + 8x}{x^4 + 4x^2 + 2}\right]$
- 23 $y = \log \sqrt{\frac{\operatorname{sen} x}{1 + 2 \cos x}}.$ $\left[\frac{2 + \cos x}{2 \operatorname{sen} x(1 + 2 \cos x)}\right]$
- 24 $y = e^{-\frac{1}{x}}.$ $\left[\frac{1}{x^2} e^{-\frac{1}{x}}\right]$
- 25 $y = e^{\frac{x-2}{x}}.$ $\left[\frac{2}{x^2} e^{\frac{x-2}{x}}\right]$
- 26 $y = e^{2x} + e^x + 2x + 5.$ $[2e^{2x} + e^x + 2]$
- 27 $y = \frac{e^{2x} - 1}{e^{2x} + 1}.$ $\left[\frac{4e^{2x}}{(e^{2x} + 1)^2}\right]$
- 28 $y = e^{3x} + e^{\operatorname{sen} x} + e^{\sqrt{x}}.$ $\left[3e^{3x} + \cos x \cdot e^{\operatorname{sen} x} + \frac{e^{\sqrt{x}}}{2\sqrt{x}}\right]$
- 29 $y = e^{\operatorname{sen} x} - \log \operatorname{sen} x.$ $\left[\cos x \left(e^{\operatorname{sen} x} - \frac{1}{\operatorname{sen} x}\right)\right]$
- 30 $y = \sqrt{\operatorname{sen} x}.$ $\left[\frac{\cos x}{2\sqrt{\operatorname{sen} x}}\right]$
- 31 $y = \sqrt{x^2 - 4x + 8}.$ $\left[\frac{x - 2}{\sqrt{x^2 - 4x + 8}}\right]$
- 32 $y = \log|x| + \log|2x + 1|.$ $\left[\frac{4x + 1}{x(2x + 1)}\right]$
- 33 $y = \operatorname{sen}(4x^2 + 1)^3.$ $[24x(4x^2 + 1)^2 \cos(4x^2 + 1)^3]$
- 34 $y = \sqrt{\operatorname{sen} x^2}.$ $\left[\frac{x \cos x^2}{\sqrt{\operatorname{sen} x^2}}\right]$

Derivate

- 35 $y = (2x + \sqrt{2x})^2.$ $\left[2(2x + \sqrt{2x}) \left(2 + \frac{1}{\sqrt{2x}} \right) = 2(1 + \sqrt{2x})(1 + 2\sqrt{2x}) \right]$
- 36 $y = \sqrt{x + \sqrt{1+x}}.$ $\left[\frac{2\sqrt{1+x} + 1}{4\sqrt{1+x}\sqrt{x + \sqrt{1+x}}} \right]$
- 37 $y = e^{\operatorname{sen}^2 x} + \cos 2x.$ $[\operatorname{sen} 2x(e^{\operatorname{sen}^2 x} - 2)]$
- 38 $y = \log^2 \operatorname{sen} x.$ $\left[\frac{2 \cos x \log \operatorname{sen} x}{\operatorname{sen} x} \right]$
- 39 $y = \log^2 \operatorname{sen}^3 x.$ $\left[\frac{18 \cos x \log \operatorname{sen} x}{\operatorname{sen} x} \right]$
- 40 $y = \log^2 \operatorname{sen} x^3.$ $\left[\frac{6x^2 \cos x^3 \log \operatorname{sen} x^3}{\operatorname{sen} x^3} \right]$
- 41 $y = \operatorname{tg}^2 \sqrt{3x}.$ $\left[\frac{3 \operatorname{sen} \sqrt{3x}}{\sqrt{3x} \cdot \cos^3 \sqrt{3x}} \right]$
- 42 $y = 4 \cos^2 x^2.$ $[-8x \operatorname{sen} 2x^2]$
- 43 $y = \log (2 \operatorname{sen} x + \operatorname{sen} 2x)^2.$ $\left[\frac{4 (\cos x + \cos 2x)}{2 \operatorname{sen} x + \operatorname{sen} 2x} \right]$
- 44 $y = \log \cos \operatorname{sen} \sqrt{x}.$ $\left[-\frac{\operatorname{sen} \operatorname{sen} \sqrt{x} \cdot \cos \sqrt{x}}{2\sqrt{x} \cdot \cos \operatorname{sen} \sqrt{x}} \right]$
- 45 $y = \frac{\operatorname{sen} 2x}{\sqrt{\operatorname{sen} x}}.$ $\left[\frac{1 - 3 \operatorname{sen}^2 x}{\sqrt{\operatorname{sen} x}} \right]$
- 46 $y = \sqrt[3]{x^2} + 2 \sqrt[4]{x^3}.$ $\left[\frac{2}{3 \sqrt[3]{x}} + \frac{3}{2 \sqrt[4]{x}} \right]$
- 47 $y = \sqrt[3]{x + \operatorname{sen} x}.$ $\left[\frac{1 + \cos x}{3 \sqrt[3]{(x + \operatorname{sen} x)^2}} \right]$
- 48 $y = \sqrt[4]{5x^2 + 3}.$ $\left[\frac{5x}{2 \sqrt[4]{(5x^2 + 3)^3}} \right]$
- 49 $y = \sqrt[3]{3x^4 - x^3 + 2}.$ $\left[\frac{4x^3 - x^2}{\sqrt[3]{(3x^4 - x^3 + 2)^2}} \right]$
- 50 $y = \sqrt[5]{\operatorname{sen}^3 x}.$ $\left[\frac{3 \cos x}{5 \sqrt[5]{\operatorname{sen}^2 x}} \right]$
- 51 $y = x^{2x}.$ $[2x^{2x}(\log x + 1)]$
- 52 $y = 7^{x^2} + x^{\sqrt{7}}.$ $[2x \cdot 7^{x^2} \log 7 - \sqrt{7} x^{\sqrt{7}-1}]$
- 53 $y = x^{2x^2+1}.$ $\left[x^{2x^2+1} \left\{ 4x \log x + \frac{2x^2+1}{x} \right\} = x^{2x^2} (4x^2 \log x + 2x^2 + 1) \right]$
- 54 $y = x \cos \log x.$ $[\cos \log x - \operatorname{sen} \log x]$
- 55 $y = \log \operatorname{tg}^2 2x.$ $\left[\frac{4(1 + \operatorname{tg}^2 2x)}{\operatorname{tg} 2x} \right]$
- 56 $y = \log \cos \operatorname{sen} x^3.$ $\left[-\frac{3x^2 \operatorname{sen} \operatorname{sen} x^3 \cdot \cos x^3}{\cos \operatorname{sen} x^3} \right]$

- 57 $y = e^{2x} \log(1+x)$. $\left[e^{2x} \left(2 \log(1+x) + \frac{1}{1+x} \right) \right]$
- 58 $y = 5^x + 5^{\cos x}$. $[(5^x - 5^{\cos x} \operatorname{sen} x) \log 5]$
- 59 $y = x^{2x}$. $[2x^{2x}(\log x + 1)]$
- 60 $y = (\operatorname{sen} x)^x$. $[(\operatorname{sen} x)^x (x \operatorname{cotg} x + \log \operatorname{sen} x)]$
- 61 $y = 3^{\operatorname{sen} 2x} + 9^{\cos^2 x}$. $[(3^{\operatorname{sen} 2x} \cos 2x - 9^{\cos^2 x} \operatorname{sen} 2x) \log 9]$
- 62 $y = \left(\operatorname{sen} \frac{\pi}{6} \right)^{\operatorname{arc} \operatorname{tg} \sqrt{x}}$. $\left[\frac{-\log 2}{21 + \operatorname{arc} \operatorname{tg} \sqrt{x} \sqrt{x}(1+x)} \right]$
- 63 $y = \left(\operatorname{tg} \frac{\pi}{3} \right)^{2 \operatorname{sen}^2 2x}$. $[3^{\operatorname{sen}^2 2x} \cdot \operatorname{sen} 4x \cdot \log 9]$
- 64 $y = (\operatorname{sen} x)^{\cos x}$. $[(\operatorname{sen} x)^{\cos x - 1} \{ \cos^2 x - \operatorname{sen}^2 x \log \operatorname{sen} x \}]$
- 65 $y = (x^3 + 1)^{x^2 - 1}$. $\left[(x^3 + 1)^{x^2 - 1} \left\{ 2x \log(x^3 + 1) + \frac{3x^2(x^2 - 1)}{x^3 + 1} \right\} \right]$
- 66 $y = \operatorname{sen} x^{x^2 + 1}$. $[x^{x^2} \cos x^{x^2 + 1} (2x^2 \log x + x^2 + 1)]$
- 67 $y = (\log x)^{\log x}$. $\left[\frac{1}{x} (\log x)^{\log x} \{ \log \log x + 1 \} \right]$
- 68 $y = \cos x^{x+1}$. $\left[-x^{x+1} \cdot \operatorname{sen} x^{x+1} \cdot \left(\log x + \frac{x+1}{x} \right) \right]$
- 69 $y = (x+2)^{\log x}$. $\left[(x+2)^{\log x} \cdot \left\{ \frac{\log(x+2)}{x} + \frac{\log x}{x+2} \right\} \right]$
- 70 $y = \log_x 2$.
(ricordare che $\log_a b = \frac{\log b}{\log a}$). $\left[-\frac{\log 2}{x \log^2 x} \right]$
- 71 $y = \frac{x}{\log_x 2}$. $\left[\frac{1 + \log x}{\log 2} = \log_2(ex) \right]$
- 72 $y = \log_{x^2} (2x+3)$. $\left[\frac{1}{2 \log^2 x} \left\{ \frac{2 \log x}{2x+3} - \frac{\log(2x+3)}{x} \right\} \right]$

Funzioni inverse

Derivare le seguenti funzioni:

- 1 $y = \operatorname{arc} \operatorname{sen} x - 2 \operatorname{arc} \operatorname{cos} x$. $\left[\frac{3}{\sqrt{1-x^2}} \right]$
- 2 $y = x \operatorname{arc} \operatorname{sen} x + \sqrt{1-x^2}$. $[\operatorname{arc} \operatorname{sen} x]$
- 3 $y = \operatorname{arc} \operatorname{tg} x + \log(1+x^2)$. $\left[\frac{1+2x}{1+x^2} \right]$