$$y=\frac{1}{\sqrt{x-4}}=(x-4)^{\frac{-1}{2}}$$

$$y'=\frac{-1}{2}(x-4)^{\frac{-1}{2}-1}=\frac{-1}{2}(x-4)^{\frac{-3}{2}}=\frac{-1}{2(x-4)^{\frac{3}{2}}}=\frac{1}{2\sqrt{(x-4)^3}}$$

$$y=\frac{1}{\sqrt{x-4}}\qquad y'=\frac{-1\dfrac{1}{2\sqrt{x-4}}}{\left(\sqrt{x-4}\right)^2}=\frac{-1}{2\sqrt{x-4}\left(\sqrt{x-4}\right)^2}$$

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$$y=\left(\frac{1}{3x}+\frac{x}{3}\right)^4\qquad y'=4\left(\frac{1}{3x}+\frac{x}{3}\right)^3\left(\frac{-3}{(3x)^2}+\frac{1}{3}\right)=4\left(\frac{1}{3x}+\frac{x}{3}\right)^3\left(\frac{-3}{9x^2}+\frac{1}{3}\right)=4\left(\frac{1}{3x}+\frac{x}{3}\right)^3\left(\frac{-1}{3x^2}+\frac{1}{3}\right)$$

$$y=\left(\frac{1}{3x}+\frac{x}{3}\right)^4=\left(\frac{1+x^2}{3x}\right)^4\qquad y'=4\left(\frac{1+x^2}{3x}\right)^3\left(\frac{2x\cdot 3x-(1+x^2)3}{(3x)^2}\right)=4\left(\frac{1+x^2}{3x}\right)^3\left(\frac{6x^2-3-3x^2}{9x^2}\right)=$$

$$=4\left(\frac{1+x^2}{3x}\right)^3\left(\frac{3x^2-3}{9x^2}\right)=4\left(\frac{1+x^2}{3x}\right)^3\left(\frac{x^2-1}{3x^2}\right)$$

$$y=\sqrt[3]{(6-x)^2}=(6-x)^{\frac{2}{3}}\qquad y'=\frac{2}{3}(6-x)^{\frac{2}{3}-1}=\frac{2}{3}(6-x)^{\frac{-1}{3}}=\frac{2}{3}\frac{1}{(6-x)^{\frac{1}{3}}}=\frac{2}{3\sqrt[3]{6-x}}$$

$$y=x^3\cos^2 3x\qquad y'=3x^2\cos^2 3x+x^3\,2\cos 3x\,(-sen\,3x)\,3=3x^2\cos^2 3x-6\cos 3x\,sen\,3x$$

$$y=\sqrt{7\,Ln\,x}\qquad y'=\frac{7\dfrac{1}{x}}{2\sqrt{7\,Ln\,x}}=\frac{\dfrac{7}{x}}{2\sqrt{7\,Ln\,x}}=\frac{7}{2x\sqrt{7\,Ln\,x}}$$

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