1) $f(x)=\left(x^5-5x^2\right)^{5x-6} \quad \rightarrow \quad f'(x)=\left(x^5-5x^2\right)^{5x-6}\left[5\cdot\ln\left(x^5-5x^2\right)+\dfrac{(5x-6)\cdot\left(5x^4-10x\right)}{x^5-5x^2}\right]$

2) $f(x)=e^{\cos\left[\ln\left(x^3\right)\right]} \qquad f'(x)=e^{\cos\left[\ln\left(x^3\right)\right]}\cdot\left(-sen\left(\ln x^3\right)\right)\cdot\dfrac{3x^2}{x^3}=-3e^{\cos\left[\ln\left(x^3\right)\right]}\cdot\left(-sen\left(\ln x^3\right)\right)\cdot\dfrac{1}{x}$

3) $f(x)=\sqrt[5]{\left(2x^2-3x+1\right)^3} \quad \rightarrow \quad f'(x)=\dfrac{3}{5}\cdot\left(2x^2-3x+1\right)^{-\frac{2}{5}}\cdot(4x-3)$

4) $f(x)=\ln\left(2x^2-x\right) \quad \rightarrow \quad f'(x)=\dfrac{4x-1}{2x^2-x}$

5) $f(x)=\tan\left(\ln x^2\right) \quad \rightarrow \quad f'(x)=\left[1+\tan^2\left(\ln x^2\right)\right]\cdot\dfrac{2}{x}$

6) $f(x)=\ln\left(\sec x\right)+\ln\left(\tan 3x\right) \quad \rightarrow \quad f'(x)=\tan x+\dfrac{3+3\tan^2(3x)}{\tan(3x)}$

7) $f(x)=\ln\left(\tan^2(3x)\right) \quad \rightarrow \quad f'(x)=\dfrac{6\tan(3x)\cdot(1+\tan^2(3x))}{\tan^2 3x}$

8) $f(x)=\dfrac{\cos 4x}{\log 5x} \quad \rightarrow \quad f'(x)=\dfrac{-4sen(4x)\cdot\log(5x)-\dfrac{\cos(4x)\cdot\log e}{x}}{\left(\log(5x)\right)^2}$

9) $f(x)=\log_5\left(sen(2x)\right) \quad \rightarrow \quad f'(x)=\dfrac{2\cos(2x)}{sen(2x)}\cdot\log_5 e$

10) $f(x)=e^{2x} \quad \rightarrow \quad f^{n)}(x)=2^n\cdot e^{2x}$