Question 24847 Differentiate $e^{2x}\log(x^2-3)$ with respect to x and differentiate $(3x^2+2x)e^{-x}$ with respect to x. .

Solution. Using the rule of differentiating product $(f\cdot g)'=f'\cdot g+g'\cdot f$ and the fule of differentiating of superposition of functions $(f(g(x)))'=f'(g(x))g'(x)$ one gets that $\frac{d}{dx}(e^{2x}\log(x^2-3))=2e^{2x}\log(x^2-3)+e^{2x}\frac{2x}{x^2-3}$. Next, $((3x^2+2x)e^{-x})'=(6x+2)e^{-x}-e^{-x}(3x^2+2x)=e^{-x}(-3x^2+4x+2)$.