



$$\begin{aligned}
 &w^2(x^2-1)^2 - x(x^2-1)w - 5xw(x^2-1) + 3x^2 + 3(\\
 &w(x^2-1))^2 - [w(x^2-1)](6x) + 3x^2 + 3(x^2-1) \\
 &w(x^2-1) = \frac{6x \pm \sqrt{36x^2 - 4(3x^2 + 3(x^2-1))}}{2} \\
 &\boxed{w(x^2-1) = 3x \pm \sqrt{3x^2 + 3}} = w[xw - w^2(x^2-1)] \\
 &\uparrow D^2(-xw + w^2(x^2-1))e^{-xw} = w[(-w)(xw - w^2(x^2-1)) + 2xw] \\
 &= w^2[-w + w^2(x^2-1) - 2xw] = w^2[-w - 2xw + w^2(x^2-1)] = 3w - 2
 \end{aligned}$$





