

$$\int (2x+1)|2x-1| + 116 \ln(4x^2+1) + 116 \ln|1+182x+1| dx = -116 \ln|4x^2-14x^2+1| + C = 116 \ln$$

$$\int (1x-x^3) dx \quad (40)$$

$$u = x^6 \Rightarrow du = 6x^5 dx \Rightarrow dx = \frac{du}{6x^5} = \frac{du}{6u^{5/6}} = \frac{1}{6} u^{-5/6} du$$

$$\int (1x-x^3) dx = \int (u^{1/6} - u^{3/6}) \cdot \frac{1}{6} u^{-5/6} du = \frac{1}{6} \int (u^{1/6-5/6} - u^{3/6-5/6}) du = \frac{1}{6} \int (u^{-2/3} - u^{-2/6}) du$$

$$= \frac{1}{6} \left(\int u^{-2/3} du - \int u^{-1/3} du \right) = \frac{1}{6} \left(3u^{1/3} - 3u^{2/3} \right) + C = \frac{1}{2} (u^{1/3} - u^{2/3}) + C$$

$$= \frac{1}{2} (x^2 - x^3) + C$$