Simulazione 2023-05-08

Soluzione dell'integrale del punto finale del problema.

$$
\begin{aligned}
&\int_{-2}^{0} g(x) - f_1(x)dx = \\
&\quad = \int_{-2}^{0} e^{-x} - (x^2 + 2x + 1)e^{-x}dx = \\
&\quad = \int_{-2}^{0} (1 - x^2 - 2x - 1)e^{-x}dx = \\
&\quad = \int_{-2}^{0} (-x^2 - 2x)e^{-x}dx = \\
&\quad = -(\int_{-2}^{0} x^2 e^{-x}dx + \int_{-2}^{0} 2xe^{-x}dx) = \\
&\quad = -(\left[-x^2 e^{-x}\right]_{-2}^{0} - \int_{-2}^{0} -2xe^{-x}dx + \int_{-2}^{0} 2xe^{-x}dx) = \\
&\quad = -(\left[-x^2 e^{-x}\right]_{-2}^{0} + 4\int_{-2}^{0} xe^{-x}dx) = \\
&\quad = -(\left[-x^2 e^{-x}\right]_{-2}^{0} + 4(\left[-xe^{-x}\right]_{-2}^{0} - \int_{-2}^{0} -e^{-x}dx)) = \\
&\quad = -(\left[-x^2 e^{-x}\right]_{-2}^{0} + 4(\left[-xe^{-x}\right]_{-2}^{0} + \left[-e^{-x}\right]_{-2}^{0})) = \\
&\quad = -(\left[-x^2 e^{-x} - 4xe^{-x} - 4e^{-x}\right]_{-2}^{0}) = \\
&\quad = \left[(x^2 + 4x + 4)e^{-x}\right]_{-2}^{0} = \\
&\quad = (0^2 + 4 \cdot 0 + 4)e^0 - ((-2)^2 + 4 \cdot (-2) + 4)e^{-2} = \\
&\quad = 4 - (4 - 8 + 4)e^{-2} = \\
&\quad = 4 - 0e^{-2} = \\
&\quad = 4
\end{aligned}
$$