1.16. Because $1-3y^{-4} \leq 1 \leq 1+y^{-2}$ for all real $y \neq 0$,

$$\int_x^\infty \left(1-\frac{3}{y^4}\right) e^{-y^2/2}\,dy \leq \int_x^\infty e^{-y^2/2}\,dy \leq \int_x^\infty \left(1+\frac{1}{y^2}\right) e^{-y^2/2}\,dy.$$

Therefore, the following two computations complete the solution:

$$\frac{d}{dy}\left[\left(\frac{1}{y}-\frac{1}{y^3}\right)e^{-y^2/2}\right] = -\left(1-\frac{3}{y^4}\right)e^{-y^2/2},$$

$$\frac{d}{dy}\left[\frac{e^{-y^2/2}}{y}\right] = -\left(1+\frac{1}{y^2}\right)e^{-y^2/2}.$$