$\int_{-\infty}^{\infty} 17xe^{-x^2}\,dx = \int_{-\infty}^{0} 17xe^{-x^2}\,dx + \int_{0}^{\infty} 17xe^{-x^2}\,dx.$

$\int_{-\infty}^{0} 17xe^{-x^2}\,dx = \lim_{t\to-\infty}\left(-\frac{17}{2}\right)\left[e^{-x^2}\right]_t^0 = \lim_{t\to-\infty}\left(-\frac{17}{2}\right)\left(1-e^{-t^2}\right)$

$= -\frac{17}{2}\cdot 1 = -\frac{17}{2}$, and $\int_{0}^{\infty} 17xe^{-x^2}\,dx = \lim_{t\to\infty}\left(-\frac{17}{2}\right)\left[e^{-x^2}\right]_0^t$

$= \lim_{t\to\infty}\left(-\frac{17}{2}\right)\left(e^{-t^2}-1\right) = -\frac{17}{2}\cdot(-1) = \frac{17}{2}.$

Therefore, $\int_{-\infty}^{\infty} 17xe^{-x^2}\,dx = -\frac{17}{2} + \frac{17}{2} = 0.$ Convergent