

$$\int_{-3}^3 e^{x^2} dx \stackrel{e^{x^2} \geq 1}{=} 2 \cdot \int_0^3 e^{x^2} dx \geq 2 \cdot \int_0^3 x^2 + 1 dx$$

$$= 2 \cdot \left[ \frac{x^3}{3} + x \right]_0^3 = 2 \cdot \left( \frac{3^3}{3} + 3 \right) = 2 \cdot (9 + 3) = 24$$

$$\Rightarrow \boxed{\int_{-3}^3 e^{x^2} dx \geq 24}$$

q.e.d