Quiz 8

$$\int_4^\infty e^{-x/2}\,dx = \lim_{b\to\infty}\int_4^b e^{-x/2}\,dx = \lim_{b\to\infty}\left[-2e^{-x/2}\right]_4^b$$

Let $u=-x/2$

so $-2du=dx$

$$= \lim_{b\to\infty}\left[-2e^{-b/2} - -2e^{-4/2}\right]$$

$$= \lim_{b\to\infty}\left[\frac{-2}{e^{b/2}} + \frac{2}{e^2}\right]$$

$$= 0 + \frac{2}{e^2}$$

$$= \boxed{\frac{2}{e^2}}$$