Ia.

integrand $= e^{-x^2}$

$$f(x) = \sum_{k=0}^{N} \frac{f^k x_0}{k!}(x-x_0)^k$$

$$= \frac{f^0(x_0)}{0!}(x-x_0)^0 + \frac{f'(x_0)}{1!}(x-x_0)^1 + \frac{f''(x_0)}{2!}(x-x_0)^2$$

$$+ \frac{f'''(x_0)}{3!}(x-x_0)^3 + \frac{f^{iv}(x_0)}{4!}(x-x_0)^4 + \frac{f^{v}(x_0)}{5!}(x-x_0)^5$$

$f(x_0) = e^{-x_0^2}$

$f'(x_0) = -2x_0 e^{-x_0^2}$

$f''(x_0) = -2e^{-x_0^2} + 4x_0^2 e^{-x_0^2}$

$f'''(x_0) = 12x e^{-x_0^2} - 8x_0^3 e^{-x_0^2}$

$f^{iv}(x_0) = 12e^{-x_0^2} - 48x_0^2 e^{-x_0^2} + 16x_0^4 e^{-x_0^2}$

$f^{v}(x_0) = 120x_0 e^{-x_0^2} + 160x_0^3 e^{-x_0^2} - 32x_0^5 e^{-x_0^2}$

$$e^1 + \frac{2(-1)e}{1}(x) + \frac{-2e^{-1} + 4e^{-1}}{2}(x)^2 + \frac{12(-1)e^{-1} - 8(-1)e^{-1}}{6}(x)^3$$

$$+ \frac{12e^{-1} - 48e^{-1} + 16e^{-1}}{24}(x+1)^4 + \frac{120(-1)e^{-1} + 160(-1)e^{-1} - 32(-1)e^{-1}}{120}(x)^5$$

$$= \frac{1}{e} + \frac{2x}{e} + \frac{2x^2}{2e} + \frac{20x^3}{6e} - \frac{20x^4}{24e} - \frac{248x^5}{120e}$$

I then plugged in $x = 1$. I got 1.6309, which is reasonable compared to 1.5261986 and 1.49366005