PROOF OF FORMULA 3.465

$$\int_0^\infty (1+2bx^2)e^{-\mu x^2}\,dx = \frac{(\mu+b)\sqrt{\pi}}{2\mu\sqrt{\mu}}$$

The change of variables $t = \sqrt{\mu}x$ yields

$$\int_0^\infty (1+2bx^2)e^{-\mu x^2}\,dx = \frac{1}{\sqrt{\mu}}\int_0^\infty (1+2at^2)e^{-t^2}\,dt$$

with $a = b/\mu$. Integration by parts gives

$$\int_0^\infty 2t^2 e^{-t^2}\,dt = \int_0^\infty e^{-t^2}\,dt = \frac{\sqrt{\pi}}{2}.$$

Now replace to obtain the result.