$$S = \frac{1}{V} = \frac{1}{V_0 + kz} = \frac{1}{1000 + 40z}$$

Because $z_0 = 0$. , $z_i = \frac{1}{2}\Delta z + (i-1)\Delta z = 0.2i - 0.1$

$$\vec{m}_{true} = \frac{1}{V_0 + k(\Delta z \cdot i - \frac{1}{2}\Delta z)} = \frac{1}{1000 + 4(2i-1)} \quad i = 1, \ldots n$$

$$d = \int_0^{\infty} s(\xi) H(z-\xi)\, d\xi = \int_0^{z} s(\xi)\, d\xi$$

$$= \int_0^{z} \frac{1}{1000 + 40z}\, d\xi = \frac{1}{40} \ln(1000 + 40z) \Big|_0^{z}$$

$$= \frac{1}{40} \ln\left(1 + \frac{z}{25}\right)$$