

For Host Galaxy

$$\text{Velocity(km/s)} = \text{redshift} \times \text{speed of light (km/s)} = 1 \times 3 \times 10^5 \text{ km/s}$$

$$\text{Distance(Mpc)} = \frac{\text{Velocity}}{\text{Hubble's constant}} = \frac{3 \times 10^5}{72} = 4.167 \times 10^9 \text{ parsec}$$

$$\begin{aligned} \text{Apparent magnitude} &= \text{abs. mag} + 5 \times \log \left(\frac{D \text{ pc}}{10 \text{ pc}} \right) = -20 + 5 \times \log \left(\frac{4.167 \times 10^9 \text{ pc}}{10 \text{ pc}} \right) \\ &= -20 + 5 \times 8.619 \\ &= 23.095 \end{aligned}$$

$$\begin{aligned} \text{Flux in counts} &= 10^{\frac{25 - \text{app. mag}}{2.5}} = 10^{\frac{25 - 23.095}{2.5}} \\ &= 10^{0.762} \\ &= 5.78096 \end{aligned}$$