

3. The magnitude of a star is given by the following formula. $M = -1.5 \log\left(\frac{B}{B_0}\right)$, where B is the brightness of the star.

a) What is the magnitude of a star with brightness 3 times B_0 ? (1 point)

b) A particular star has magnitude 4.5. What is the brightness of the star in terms of B_0 ? (1 point)

4. A particular population is described by the following model: $P(t) = 1.2 \times 10^5 (0.95)^t$, where t is measured in years.

a) Give the growth/decay factor and the growth/decay rate. (2 points)

b) Rewrite the model using base e . What is the instantaneous growth or decay rate? (2 points)