

Problem Set 2

1. Spatial variation in reproduction: arithmetic mean

$$600 \cdot \frac{2}{3} \cdot 1 + 600 \cdot \frac{1}{3} \cdot 2 = 800$$

2. Temporal variation in reproduction: geometric mean

Species A $\left(\frac{2}{3}\right)^{\frac{1}{3}} \cdot \left(\frac{1}{3}\right)^{\frac{2}{3}} = 2.884$

Species B $1^{\frac{1}{6}} \cdot 4^{\frac{3}{6}} \cdot 8^{\frac{1}{3}} = 4$

4. $\frac{d}{dt} N = 0.2 \cdot N - 0.002 \cdot N^2$ $\frac{d}{dt} \frac{N}{N} = 0.2 - 0.002 \cdot N$

$$0 = 0.2 - 0.002 \cdot N$$

$$100.$$

5. Species 1

$$AM := \frac{1}{2} \cdot 3.5 + \frac{1}{2} \cdot 1 \quad AM = 2.25$$

$$GM := 3.5^{\frac{1}{2}} \cdot 1^{\frac{1}{2}} \quad GM = 1.871$$