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1a) i. continuous

ii. $\frac{d\lambda}{dt} = -2\lambda$

iii. $F = -2\lambda$

iv. $\lambda = -2\lambda \Rightarrow \lambda = 0$

v. $F = -2(0) = 0 \Rightarrow$ unstable b/c $0 \not< 0$

1b) i. discrete

ii. $\lambda(n) = \frac{1}{2}(\lambda(n-1))$

iii. $F = \frac{1}{2}\lambda$

iv. $\lambda = \frac{1}{2}\lambda \Rightarrow \lambda = 0$

v. $F' = \frac{1}{2} \Rightarrow$ stable b/c $\frac{1}{2} < 1$

1c. i. discrete

ii. $\lambda(n) = 2\lambda(n-1)(1-\lambda(n-1))$

iii. $F = 2\lambda(1-\lambda)$

iv. $\lambda = 2\lambda(1-\lambda)$

$\lambda = 2\lambda - 2\lambda^2$

$2\lambda^2 - \lambda = 0 \Rightarrow \lambda = 0, \frac{1}{2}$

v. $F'(0) = 0 \Rightarrow$ stable b/c $-1 < 0 < 1$

$F'(\frac{1}{2}) = 2 \Rightarrow$ unstable b/c $-1 \not< 2 \not< 1$

1d) i. continuous

ii. $\frac{d\lambda}{dt} = 2\lambda(1-\lambda)$

iii. $F = 2\lambda(1-\lambda)$

iv. $\lambda = 2\lambda(1-\lambda) \Rightarrow \lambda = 0, \frac{1}{2}$

v. $F(0) = 0 \Rightarrow$ unstable b/c $0 \not< 0$

$F(\frac{1}{2}) = \frac{1}{2} \Rightarrow$ unstable b/c $\frac{1}{2} \not< 0$