

#flo #inclass

1 | first step analysis!

1.1 | ameoba prob:

- every step, it can
 - die
 - do nothing
 - split into two what is the prob that it goes extinct?

we can do something called first step analysis, and get that $P(D) = 1$

1.2 | gamblers ruin

repeated bets A wins bet with prob p and B wins w/ prob q , which is $= 1 - p$ which is symmetric.

A starts w/ i dollars, and B starts with $N-i$ dollars

$p_i = P(\text{A wins game} \mid \text{A starts with } i) = pp_i + 1 + q + p_i - 1$ diff eq time?

so we make a geuss, like $p_i = x^i$ which is wrong but helpful we do some algebra, and get $x = 1$ or $x = \frac{1-p}{p} = \frac{q}{p}$ and then we do diff eq. and get $p_i = A(1)^i + B\left(\frac{q}{p}\right)^i$ for constants A and B wtf??