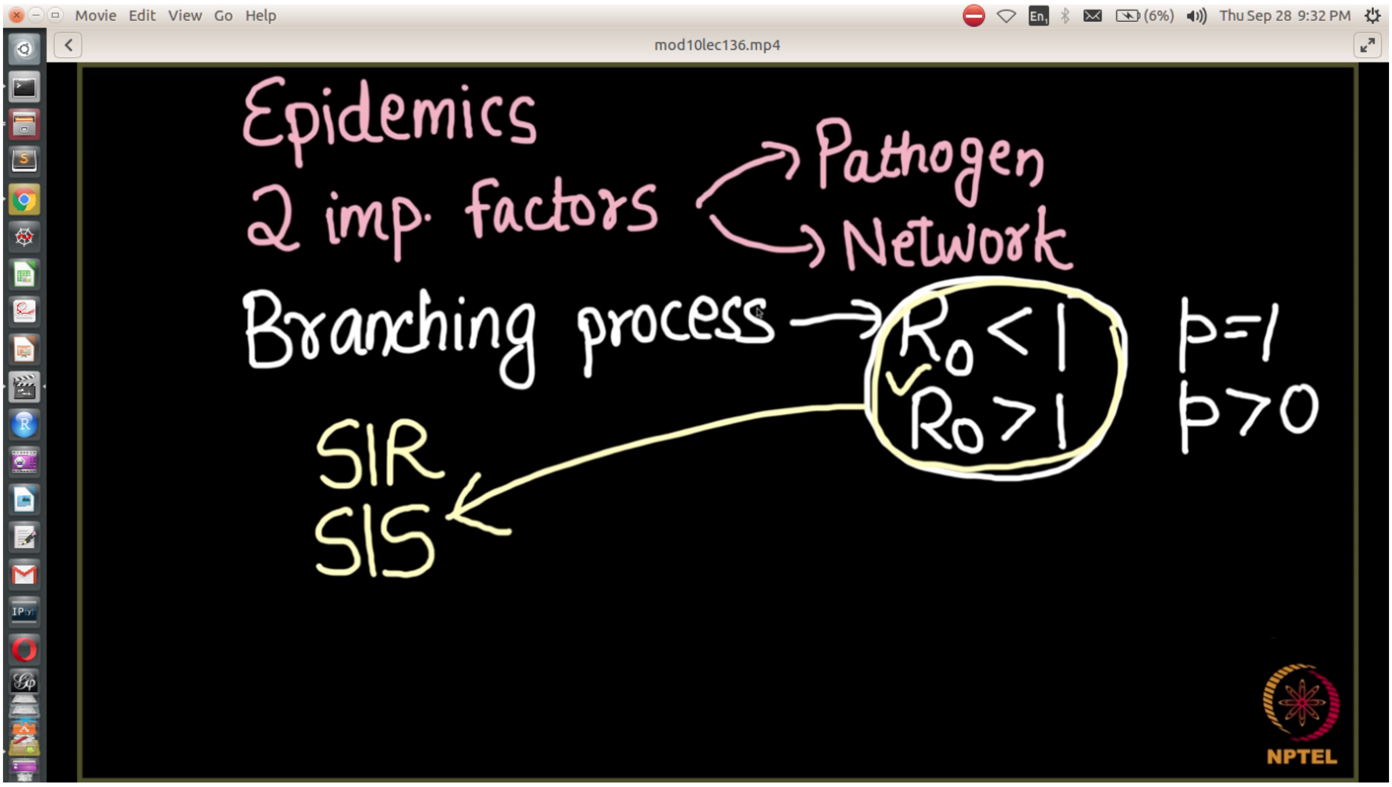
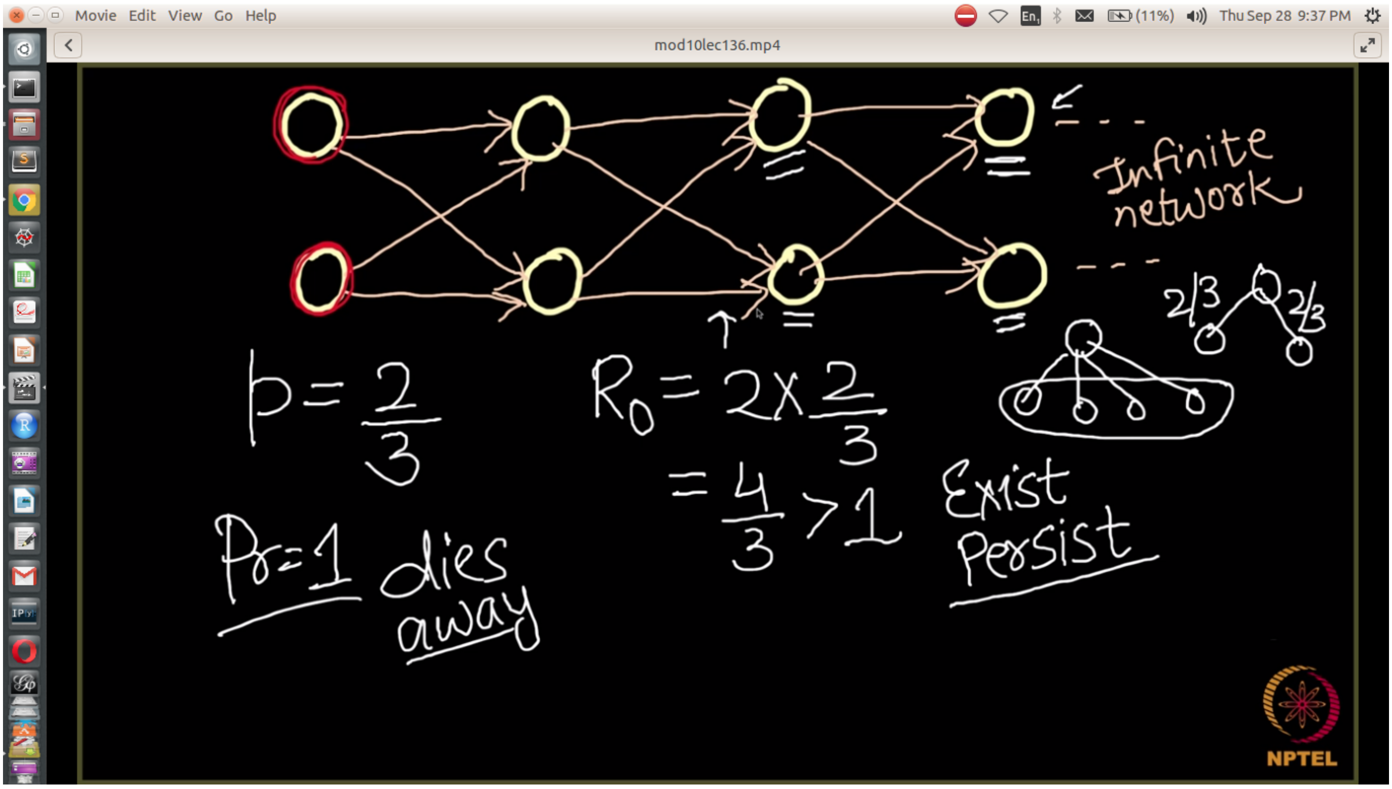
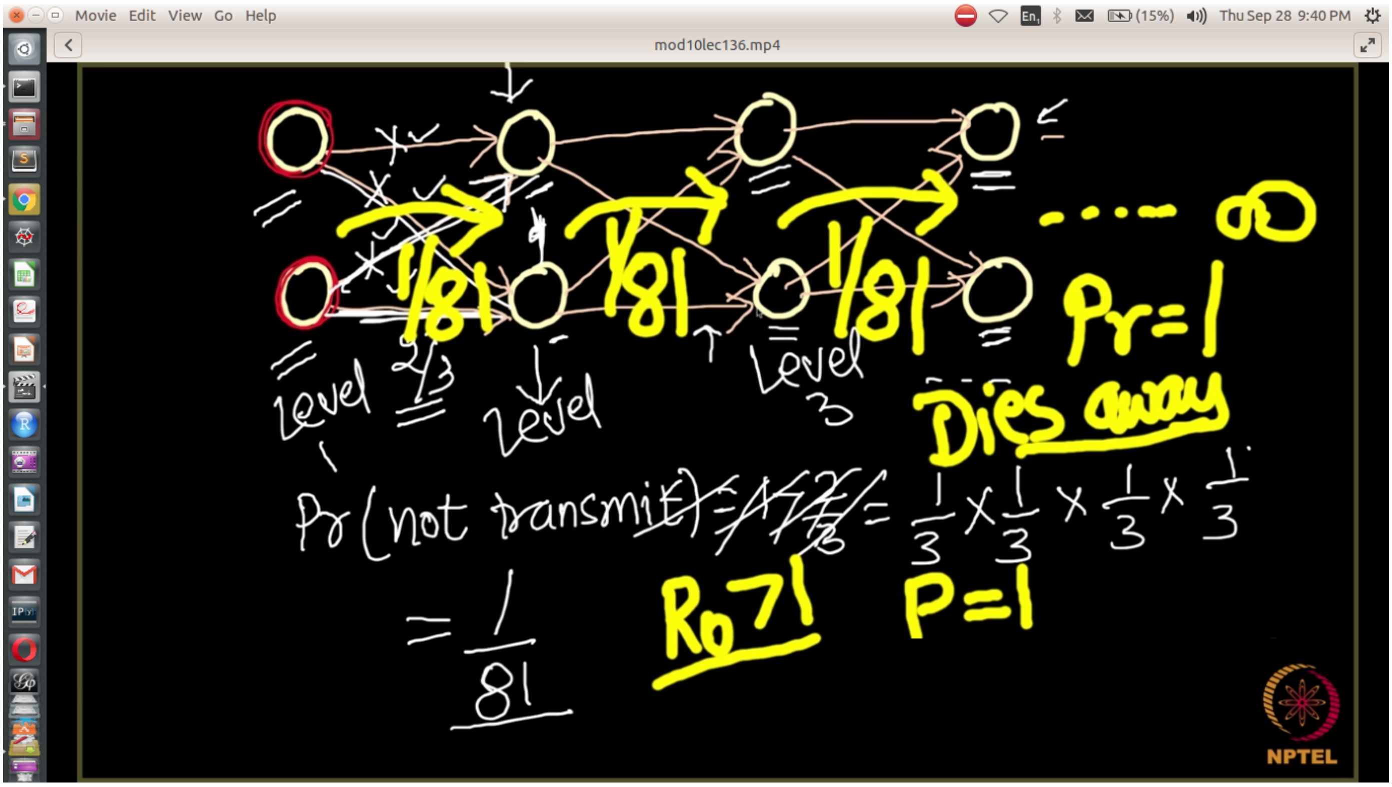
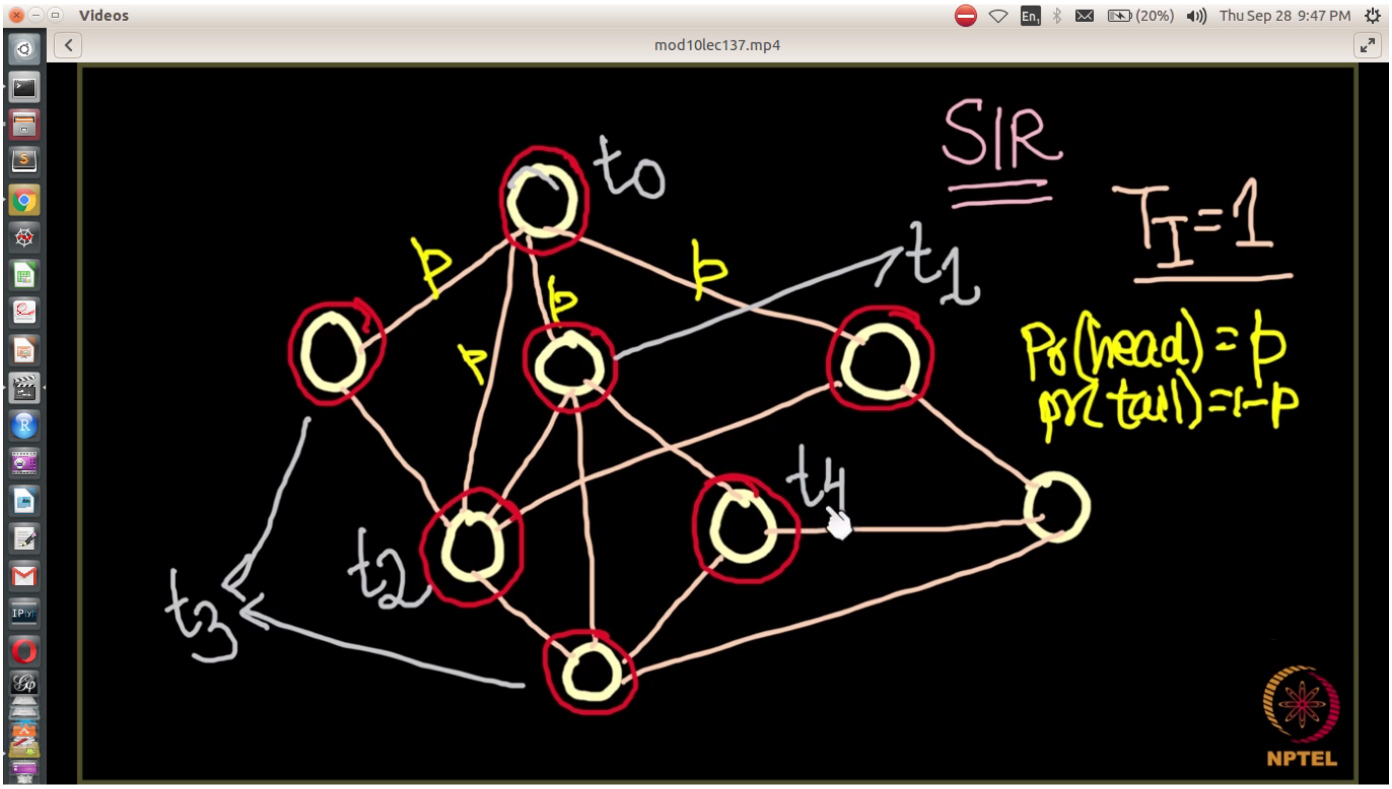
Lec136: Rich get Richer Phenomenon 2 - Basic reproductive number revisited for complex networks

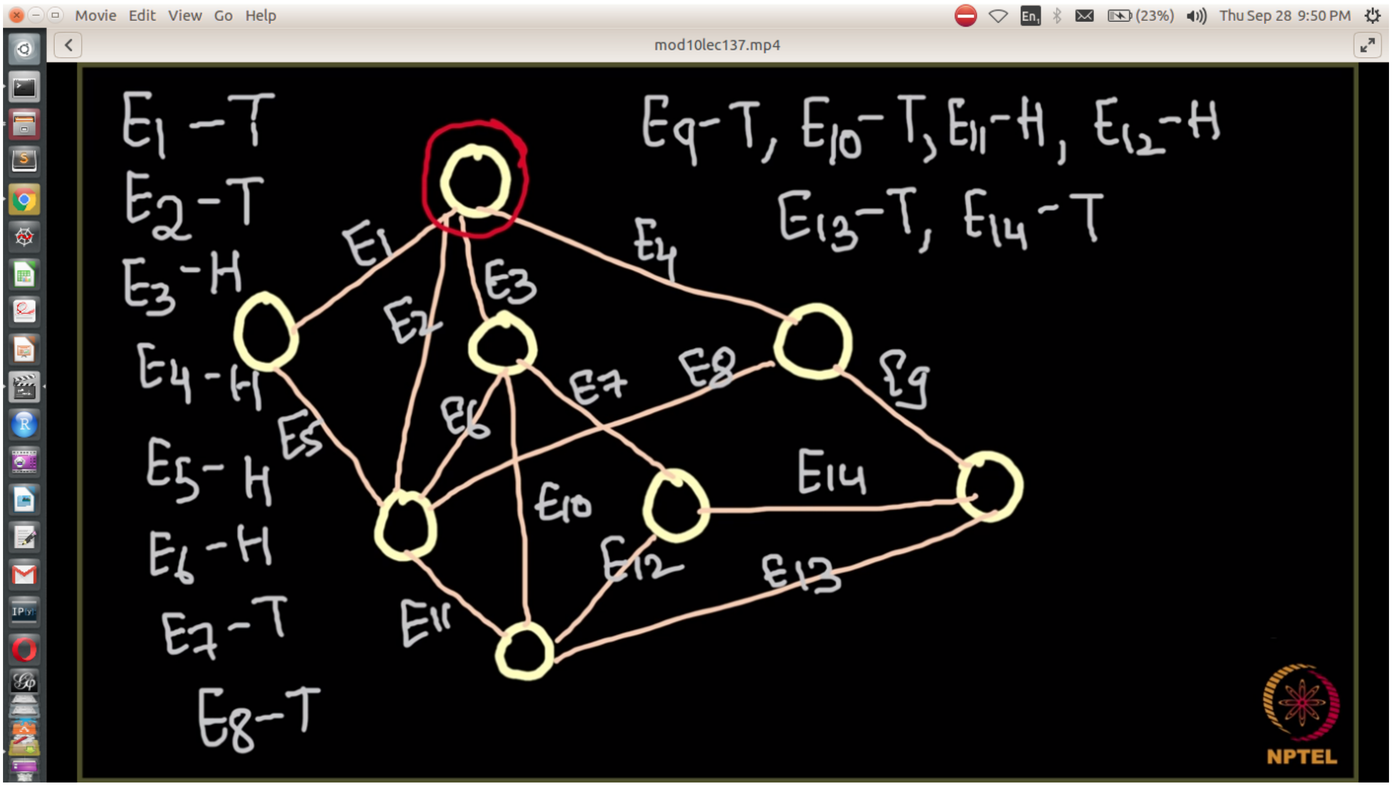


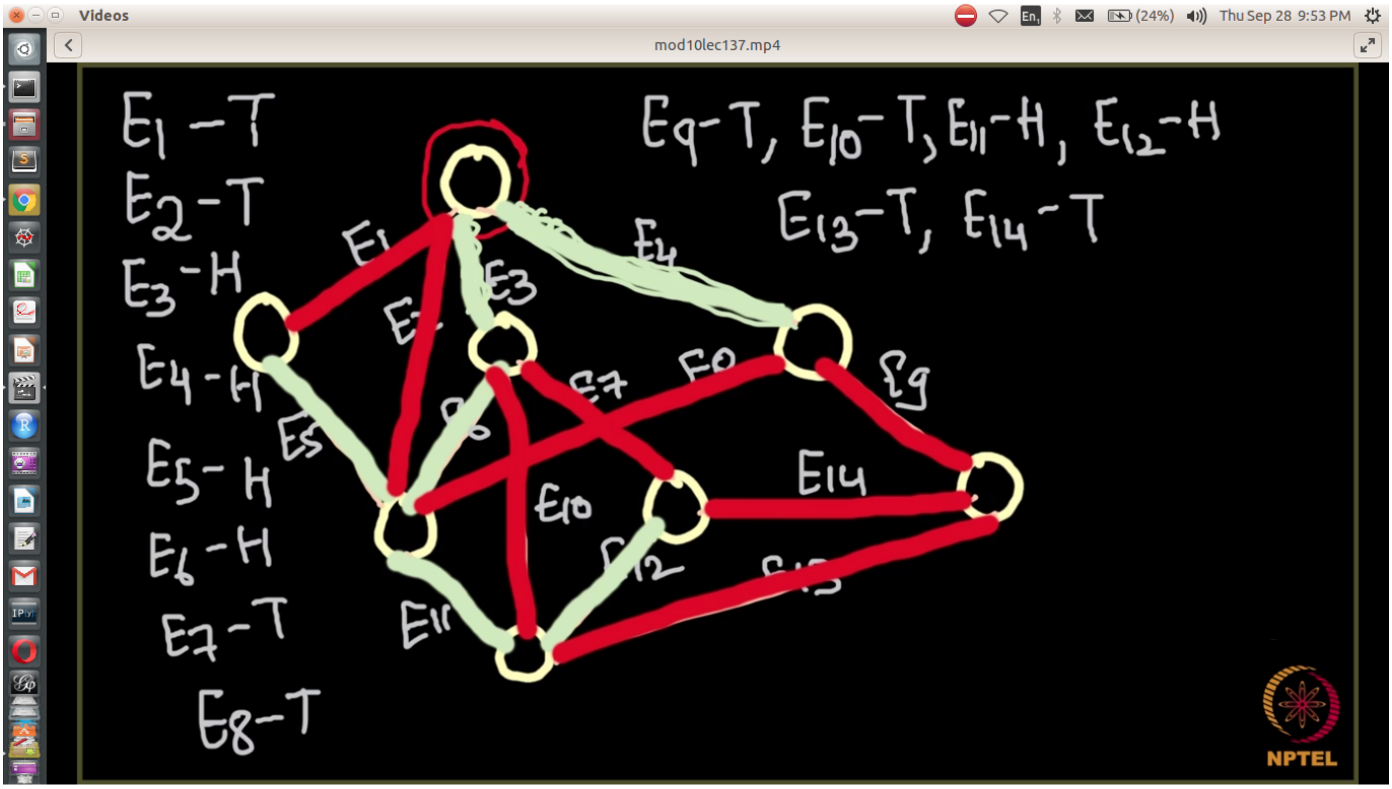




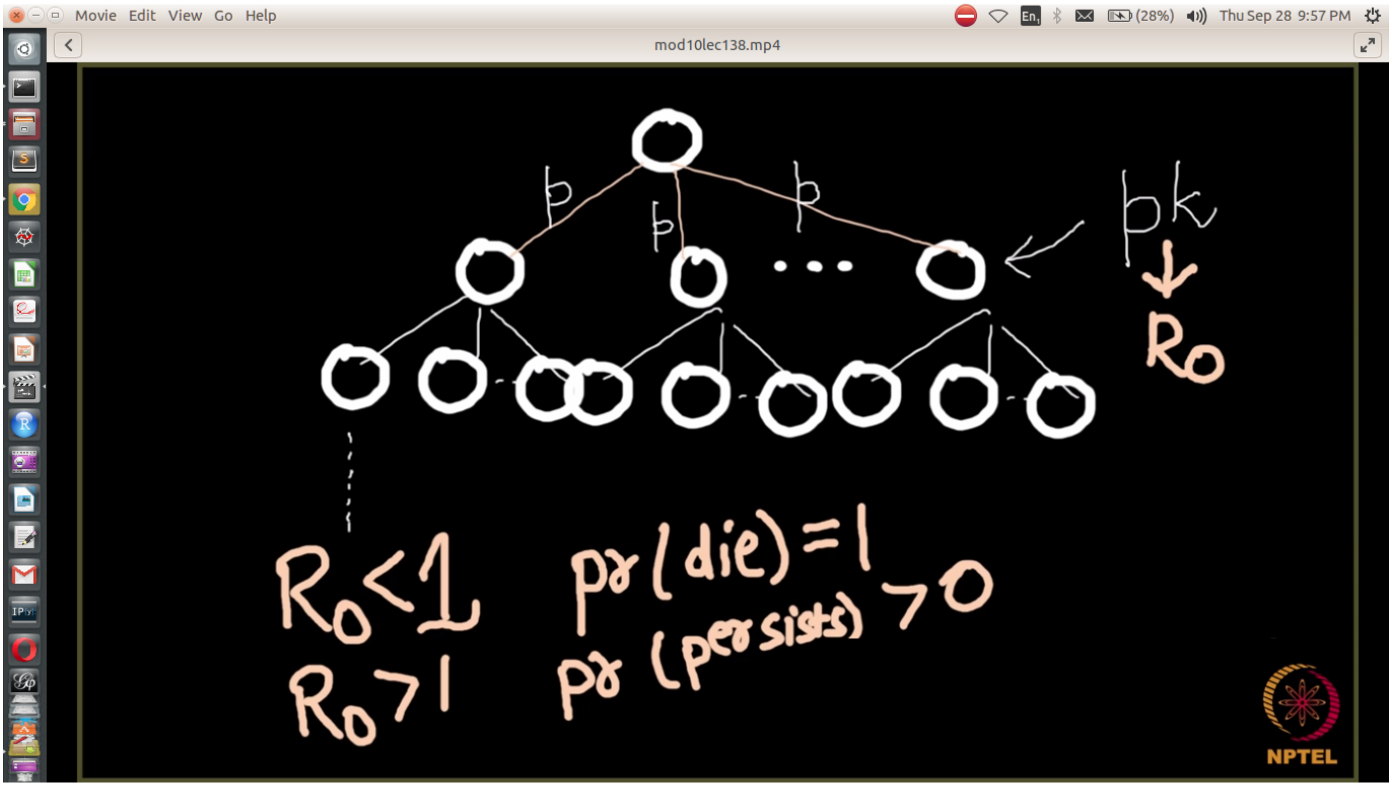
Lec137: Rich get Richer Phenomenon 2 - Percolation Model

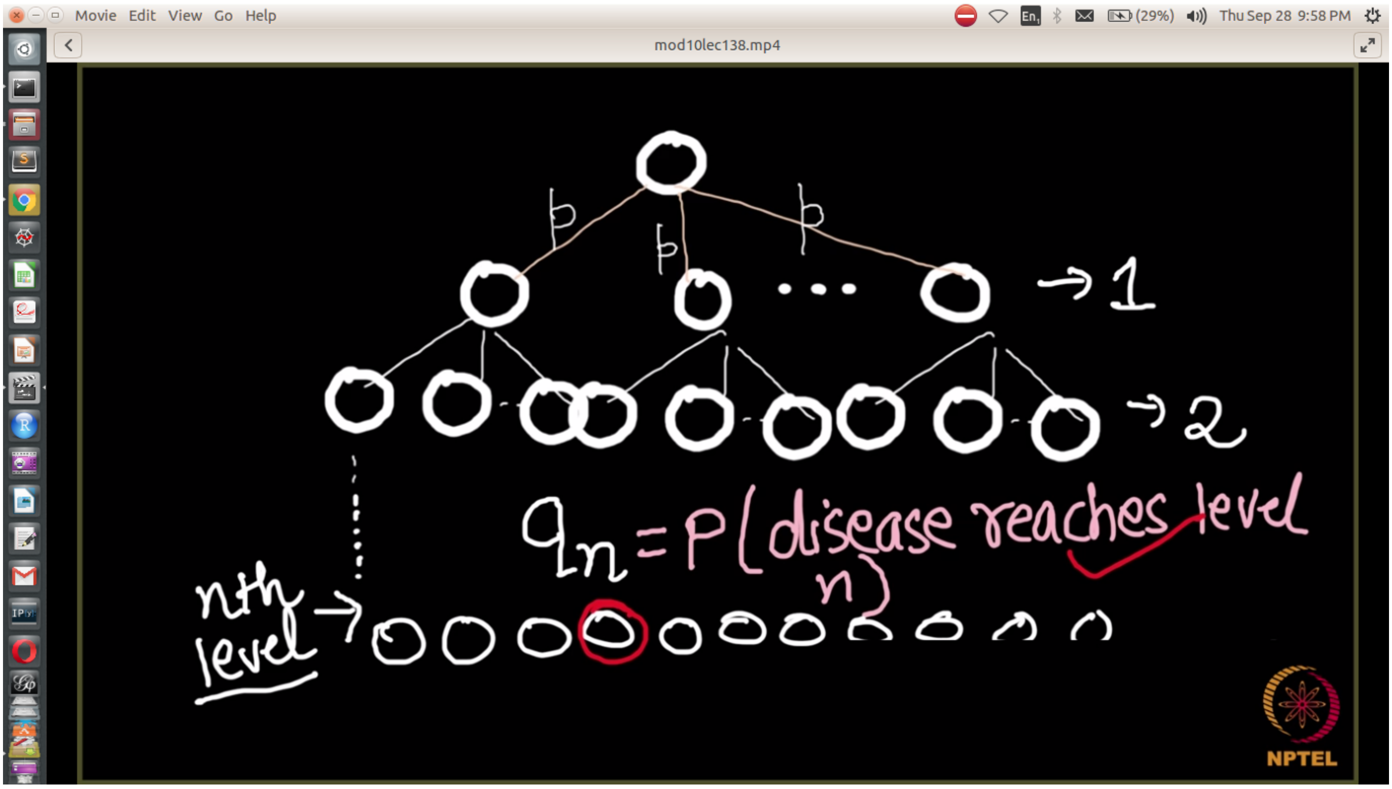


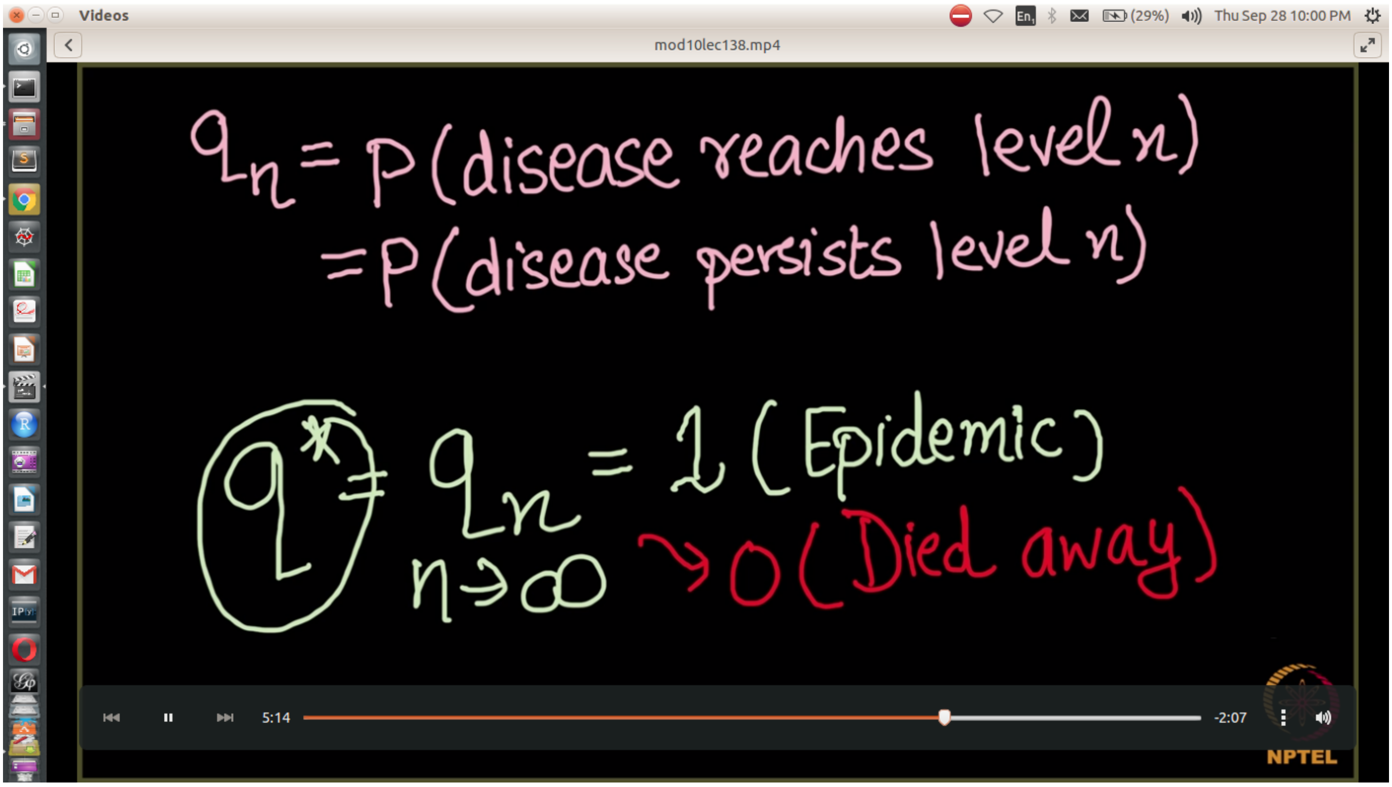


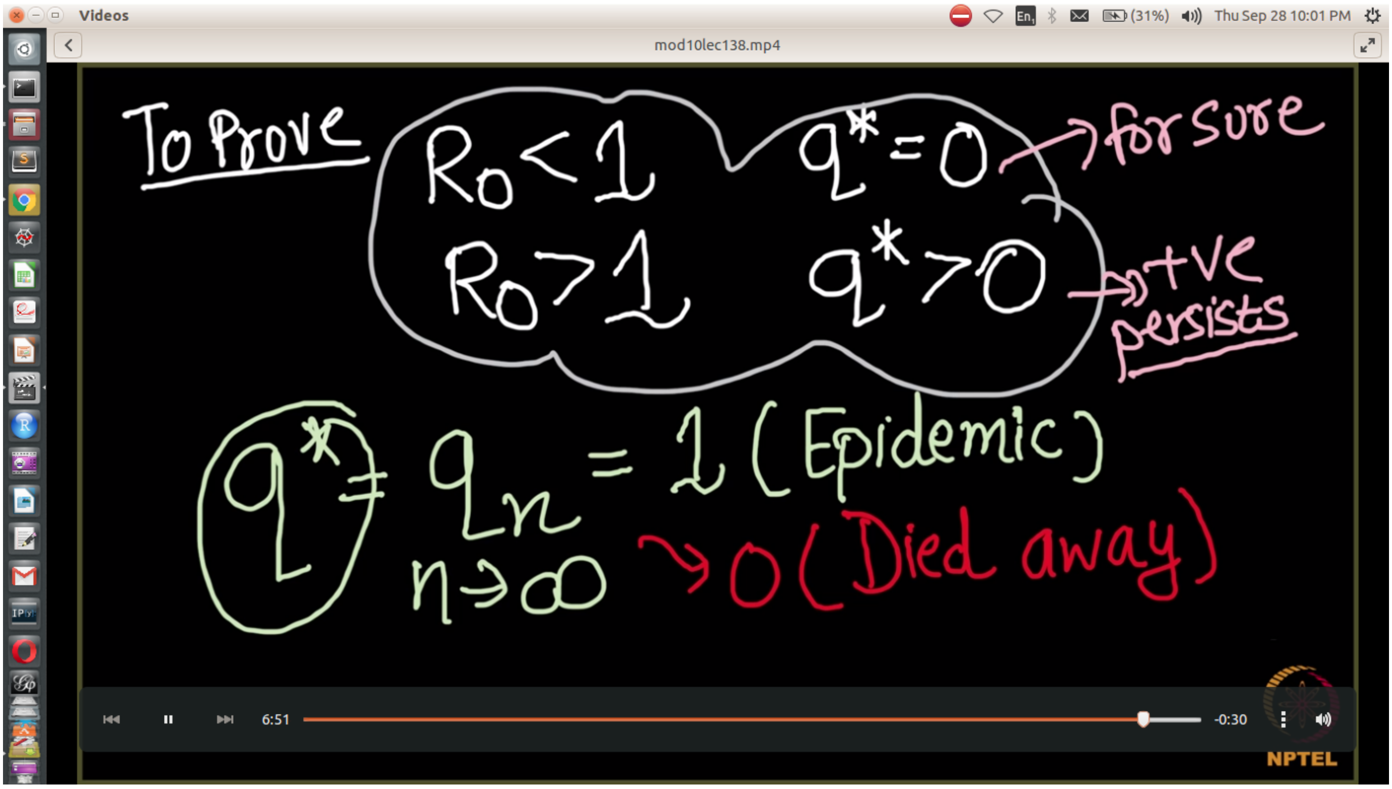


Lec138: Rich get Richer Phenomenon 2 - Analysis of basic reproductive number in branching mode (The Problem Statement)

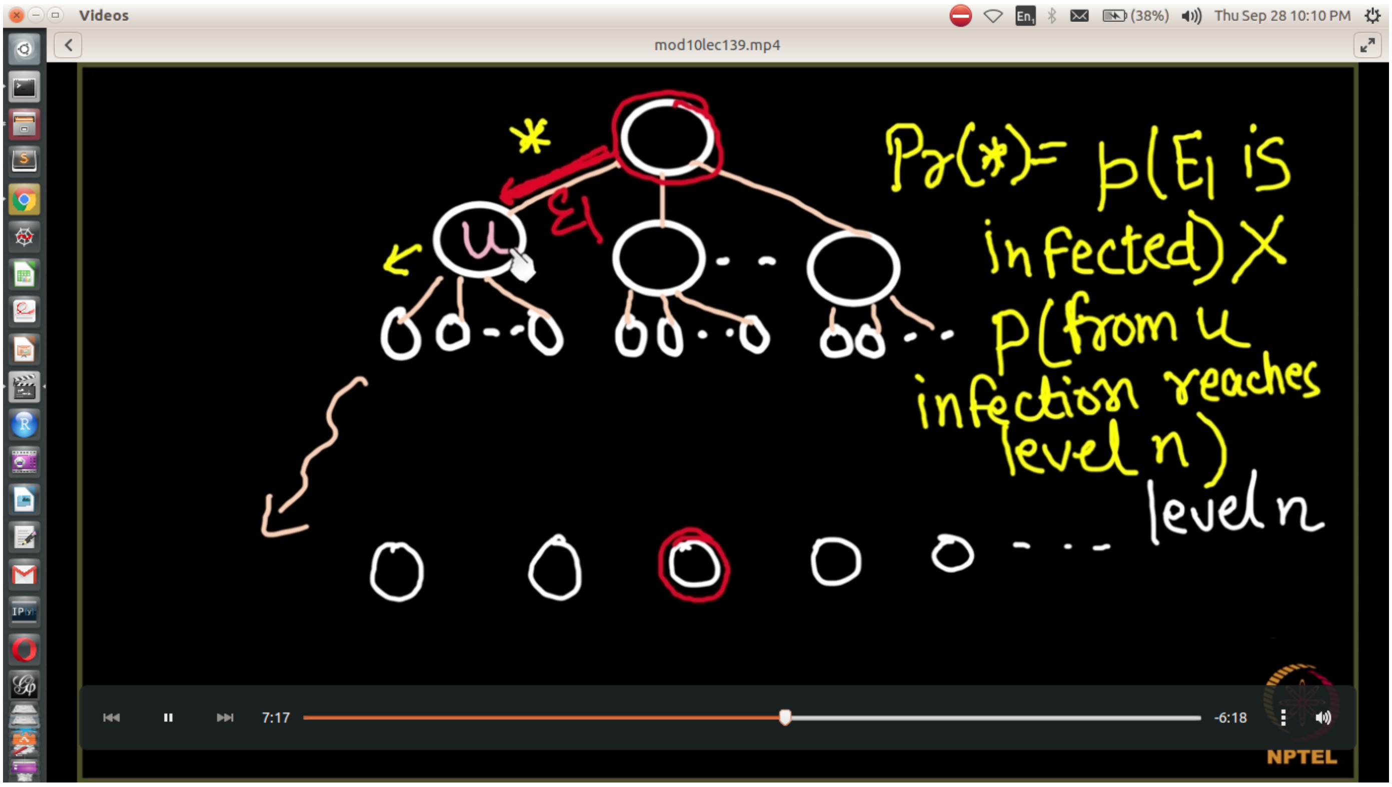

Movie Edit View Go Help
Thu Sep 28 9:57 PM
mod10lec138.mp4
p
p
p
pk
R0
R0<1   pr(die)=1
R0>1   pr(persists)>0
NPTEL

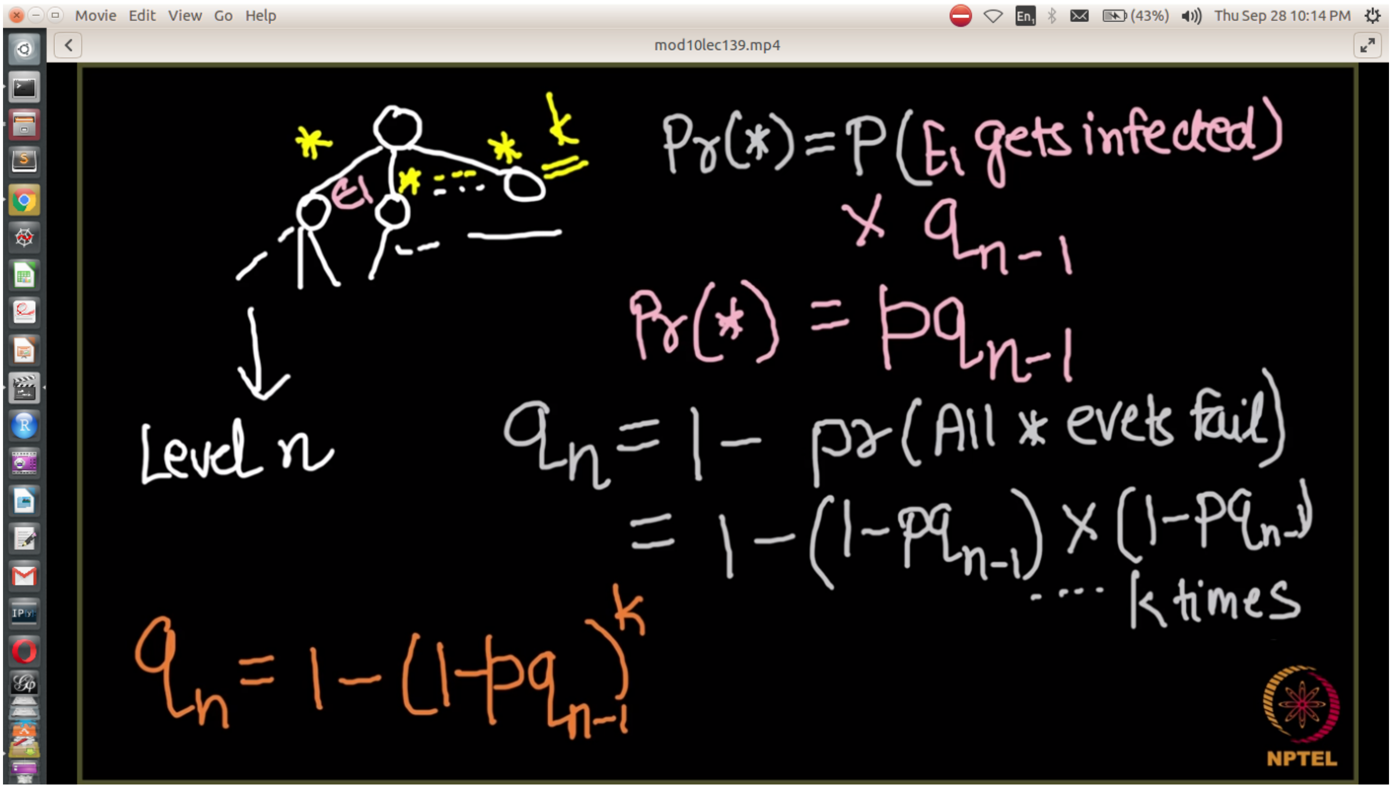

Movie Edit View Go Help
Thu Sep 28 9:58 PM
mod10lec138.mp4
p
p
p
→ 1
→ 2
qn = P(disease reaches level n)
nth level →
NPTEL

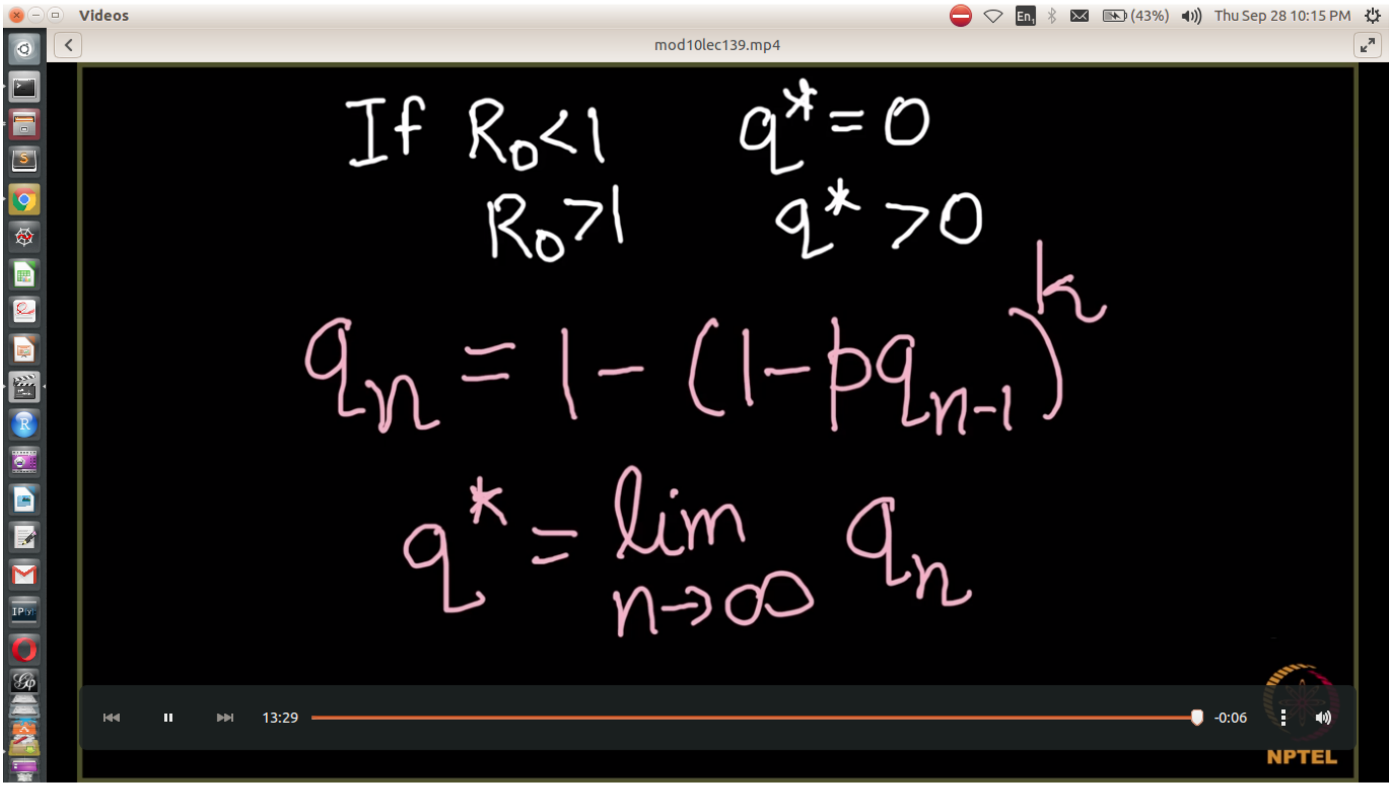




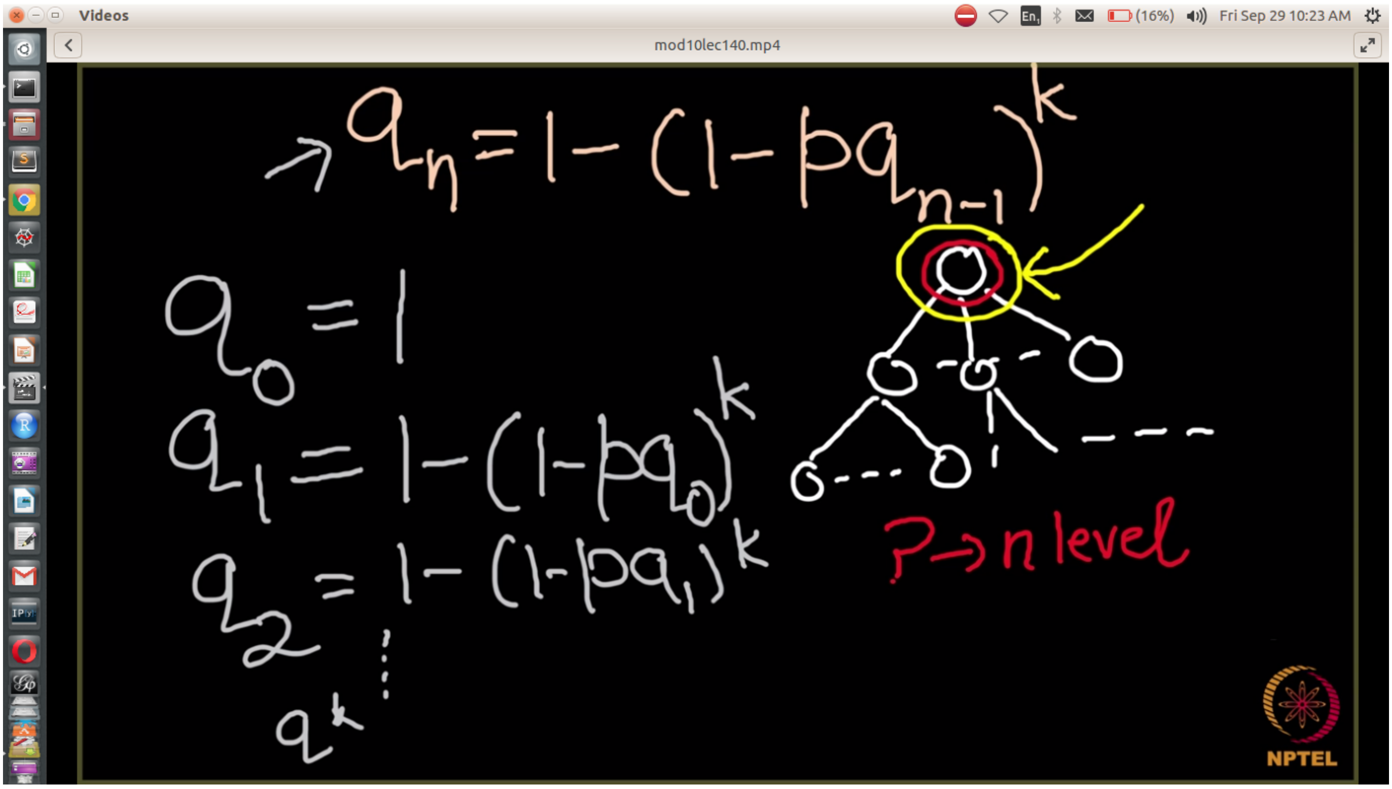
Lec139: Rich get Richer Phenomenon 2 - Analysing basic reproductive number 2

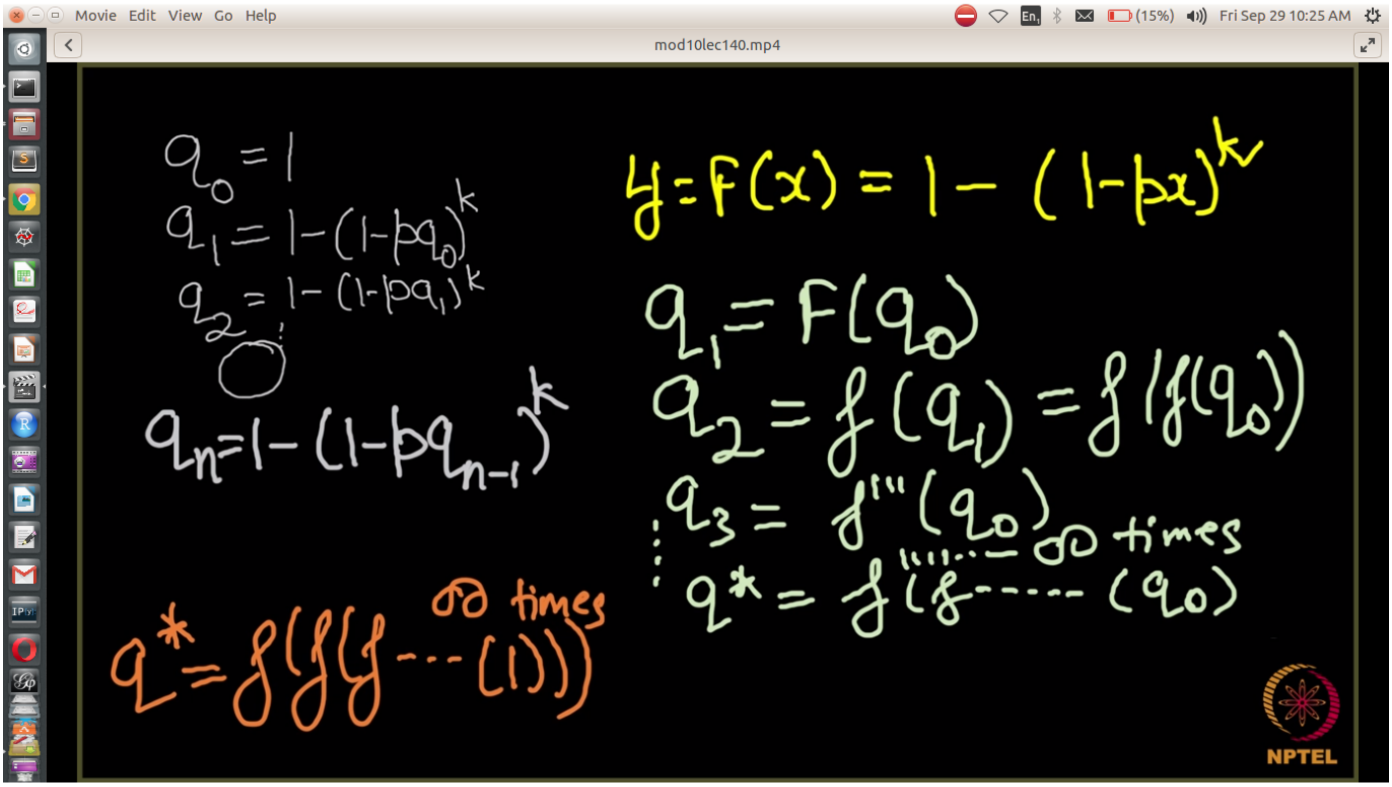

Videos
mod10lec139.mp4
Pr(*) = p(E1 is infected) X P(from u infection reaches level n)
level n
7:17
-6:18
NPTEL

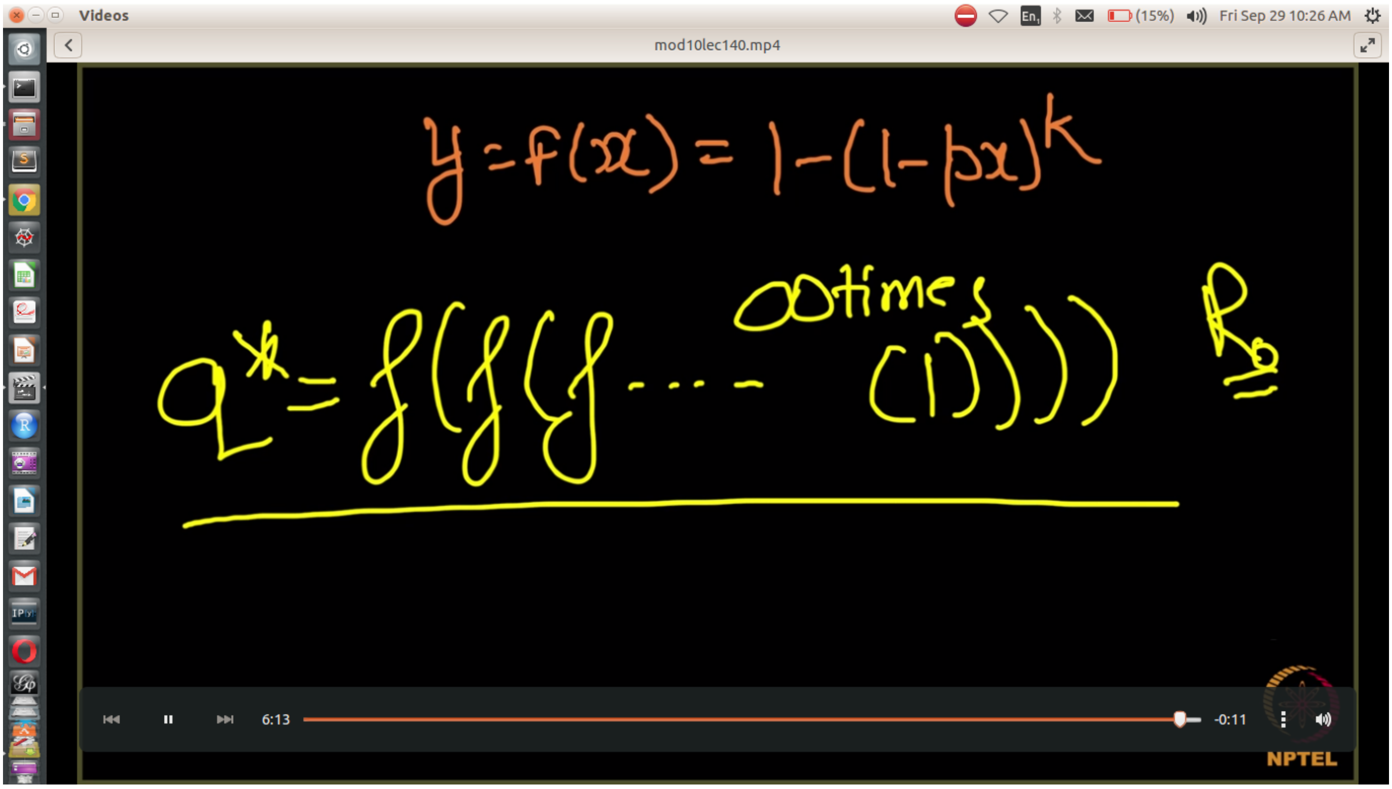

Movie Edit View Go Help
mod10lec139.mp4
Level n
Pr(*) = P(E1 gets infected) × q_{n-1}
Pr(*) = p q_{n-1}
q_n = 1 − pr(All * events fail)
= 1 − (1 − p q_{n-1}) × (1 − p q_{n-1}) .... k times
q_n = 1 − (1 − p q_{n-1})^k
NPTEL



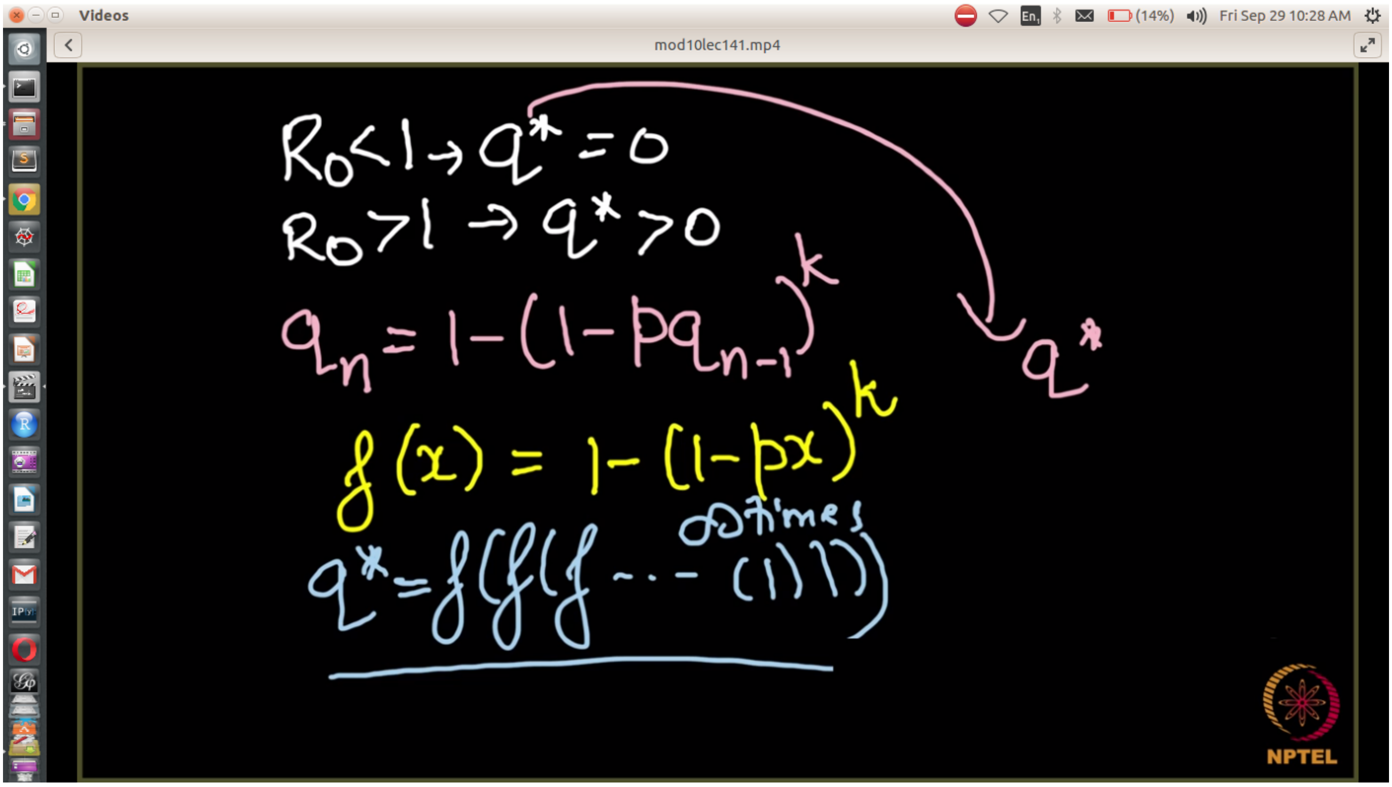
Lec140: Rich get Richer Phenomenon 2 - Analysing basic reproductive number 3

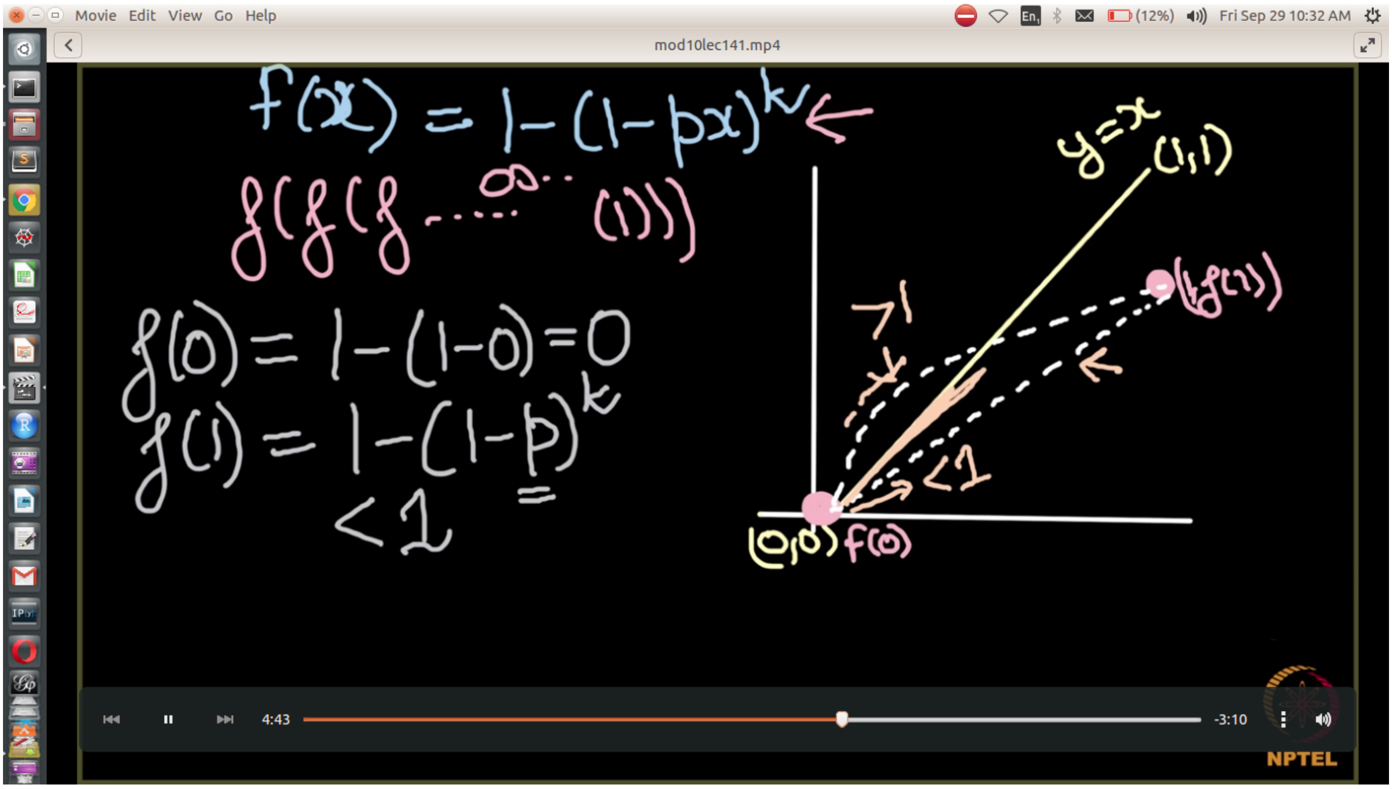


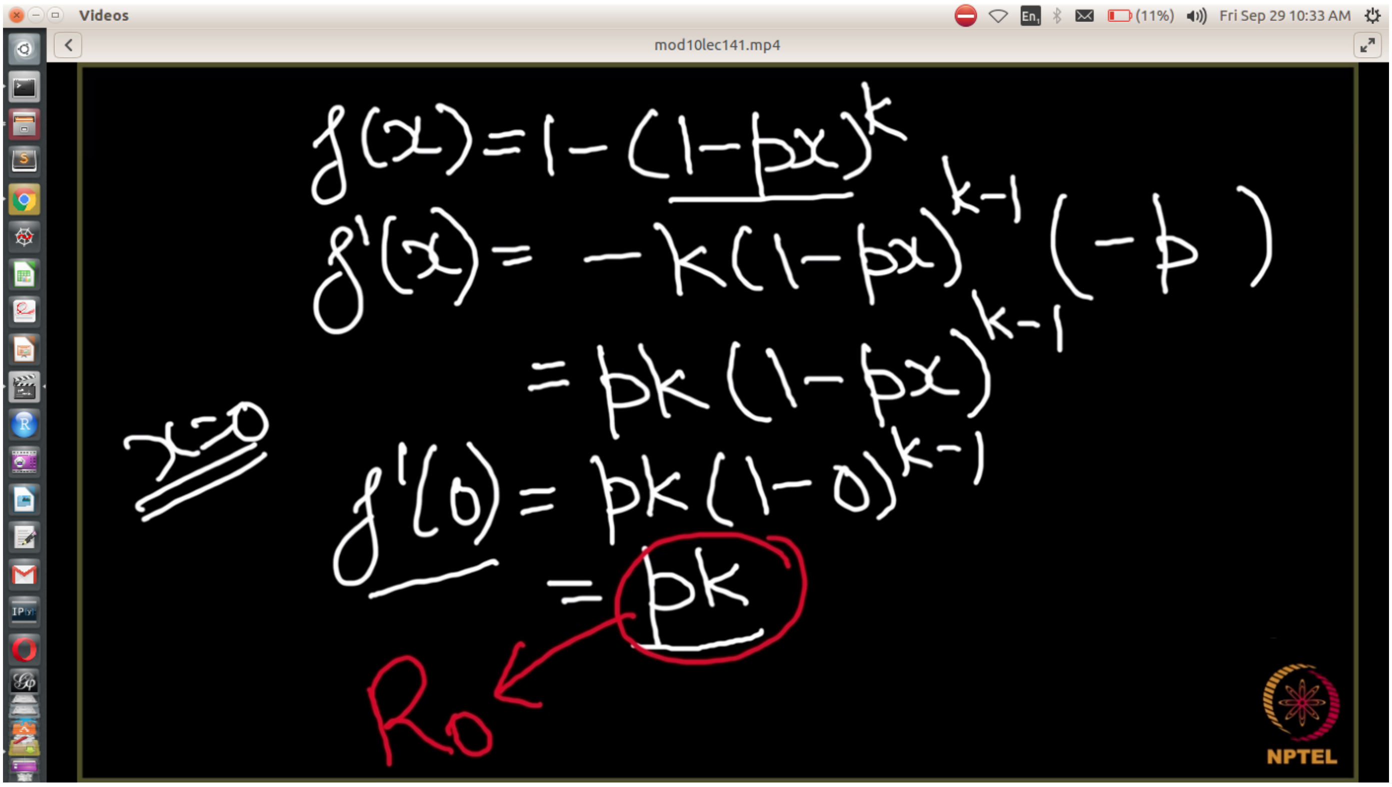


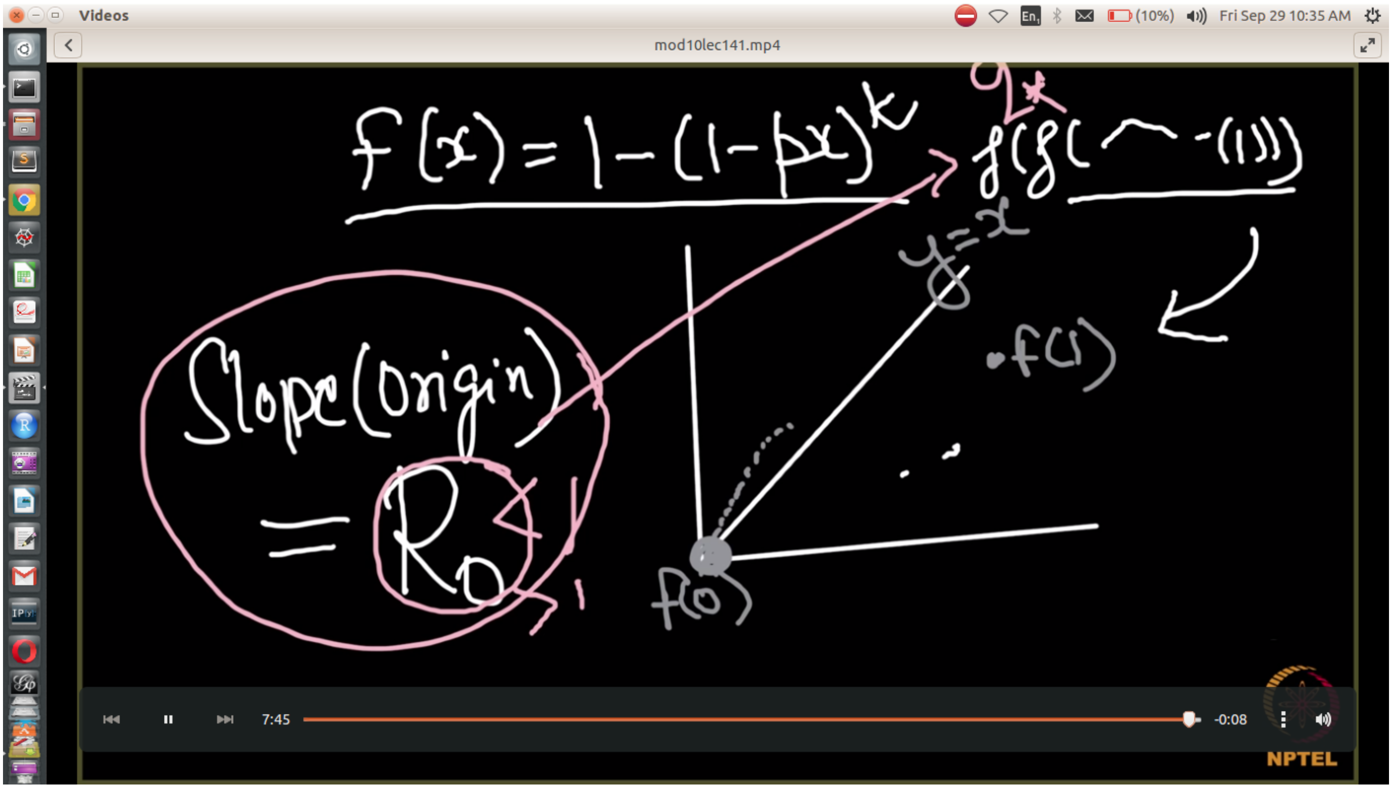


Lec141: Rich get Richer Phenomenon 2 - Analysing basic reproductive number 4

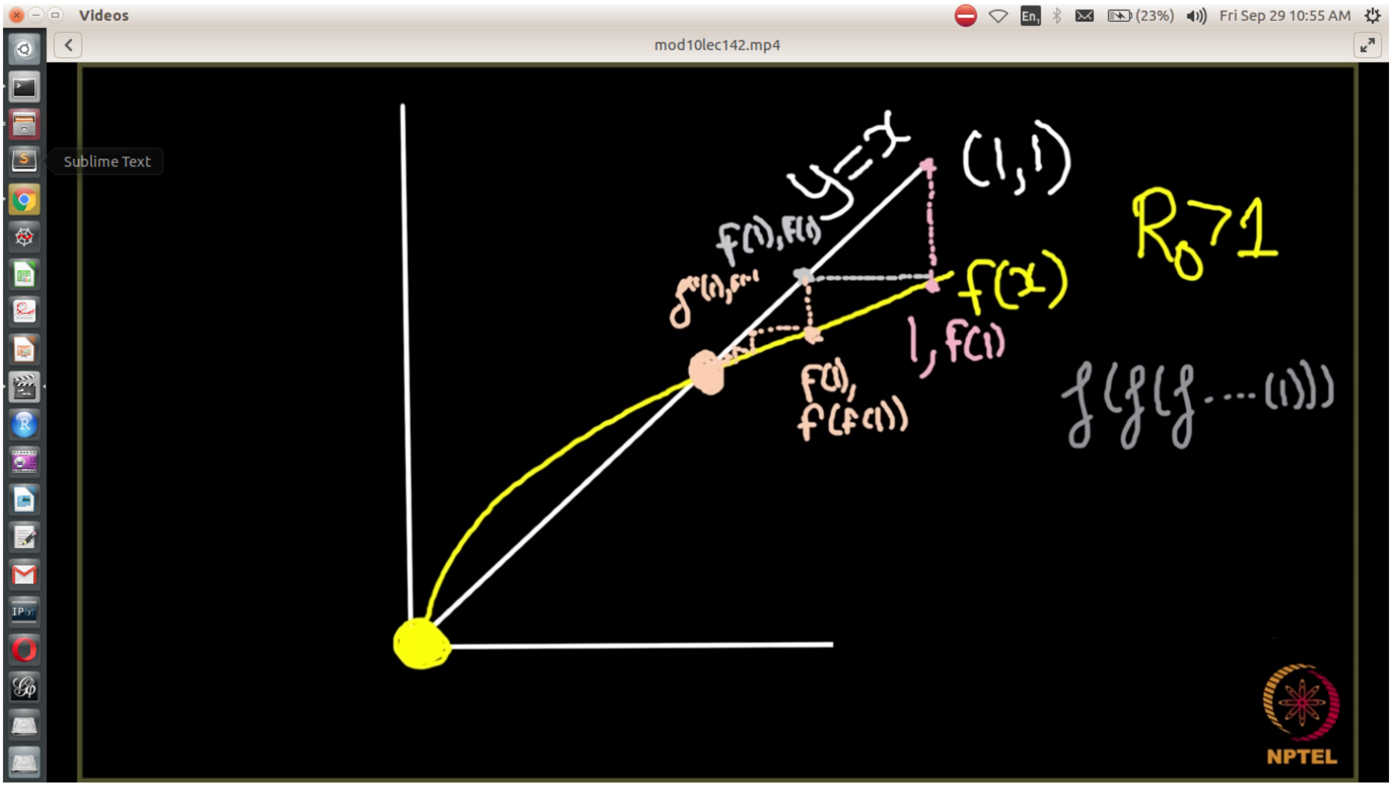

Videos
Fri Sep 29 10:28 AM
mod10lec141.mp4
$R_0 < 1 \rightarrow q^* = 0$
$R_0 > 1 \rightarrow q^* > 0$
$q_n = 1 - (1 - p q_{n-1})^k$
q^*
$f(x) = 1 - (1 - px)^k$
∞ times
$q^* = f(f(f \cdots (1)))$
NPTEL

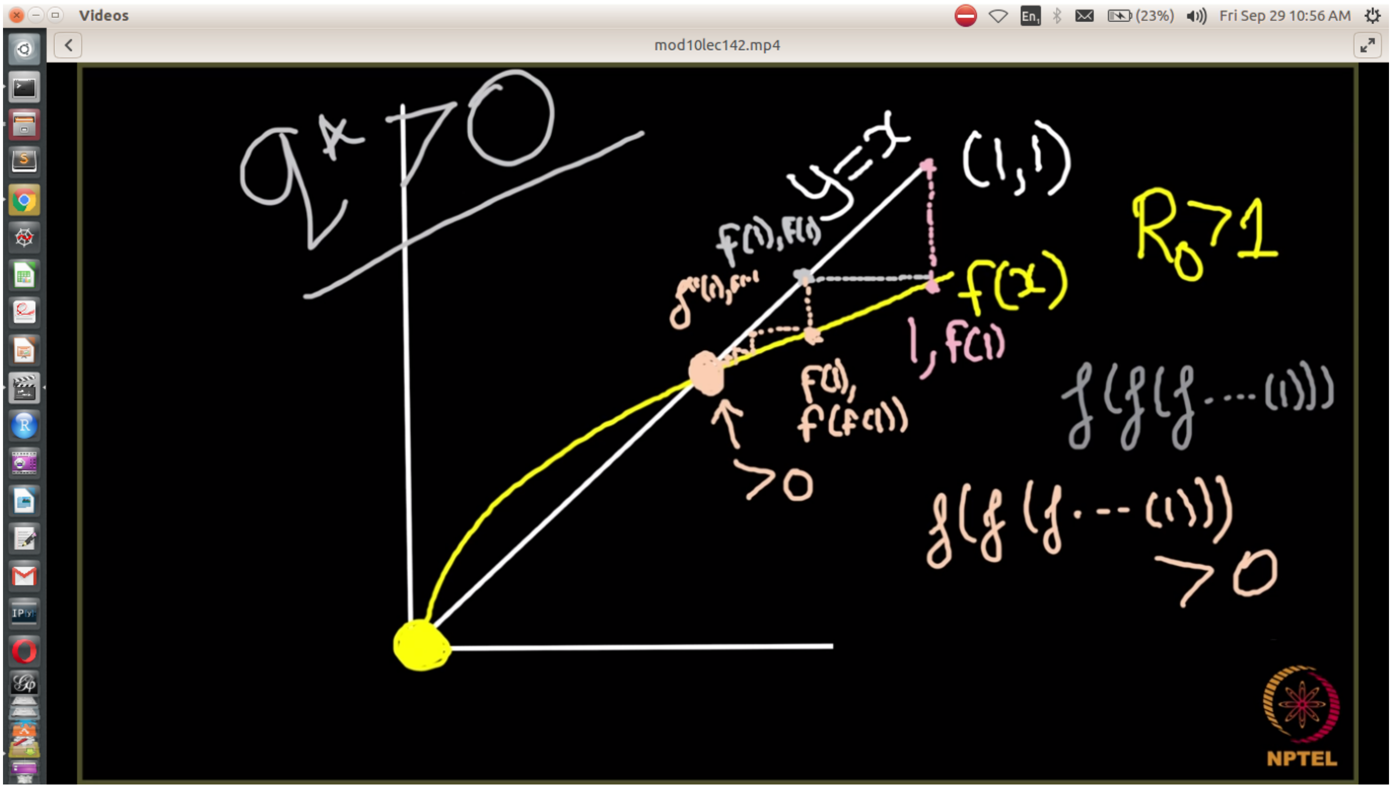

Movie Edit View Go Help
Fri Sep 29 10:32 AM
mod10lec141.mp4
$f(x) = 1 - (1 - px)^k$
$f(f(f \ldots \infty \ldots (1)))$
$f(0) = 1 - (1 - 0) = 0$
$f(1) = 1 - (1 - p)^k$
< 1
$y = x$
$(1,1)$
$(1, f(1))$
> 1
< 1
$(0,0)$ $f(0)$
4:43
-3:10
NPTEL





Lec142: Rich get Richer Phenomenon 2 - Analysing basic reproductive number 5


Videos
Fri Sep 29 10:55 AM
mod10lec142.mp4
Sublime Text
y=x
(1,1)
f(1), f(1)
f(x)
1, f(1)
f(1),
f(f(1))
R0>1
f(f(f....(1)))
NPTEL


Videos
Fri Sep 29 10:56 AM
mod10lec142.mp4
q* > 0
y=x
(1,1)
f(1), f(1)
f(x)
1, f(1)
f(1),
f(f(1))
>0
R0>1
f(f(f....(1)))
f(f(f.--(1)))
>0
NPTEL