

The story of a farmer

Old MacDonald

Cows

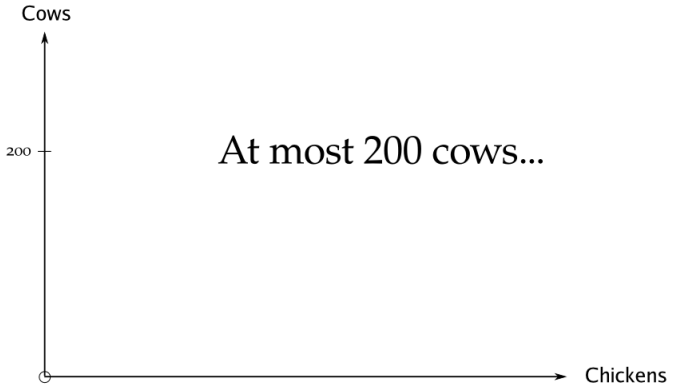


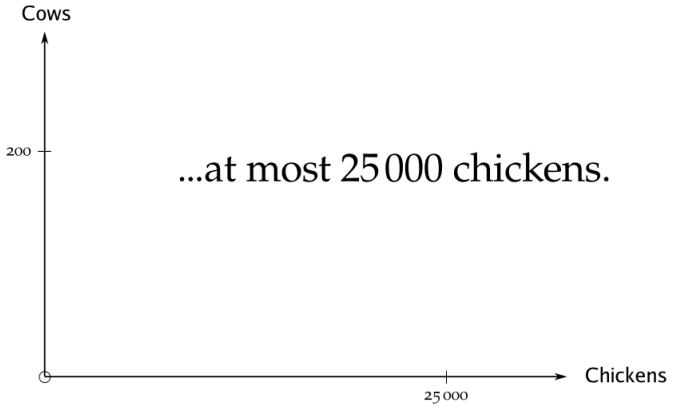
Chickens

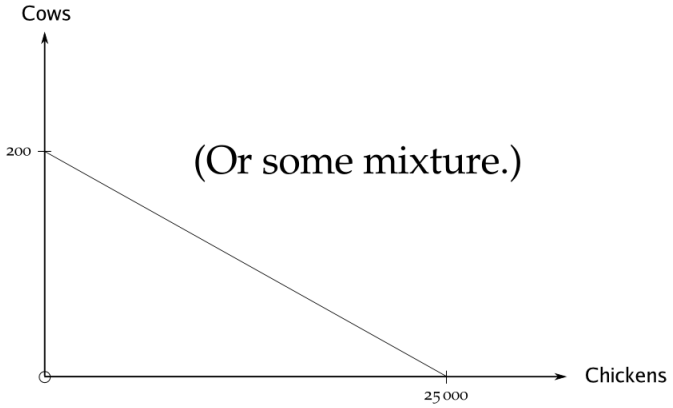


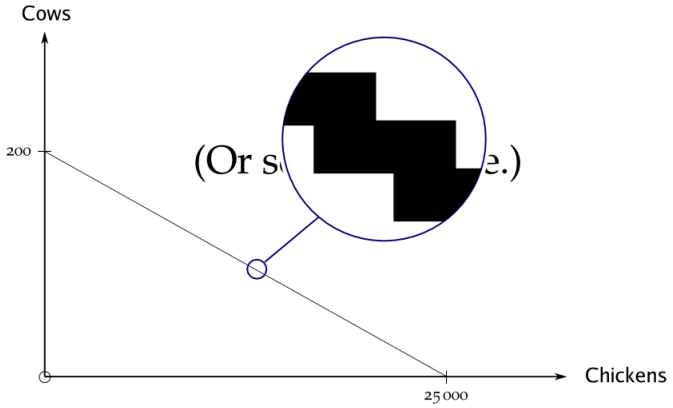
Finite Space

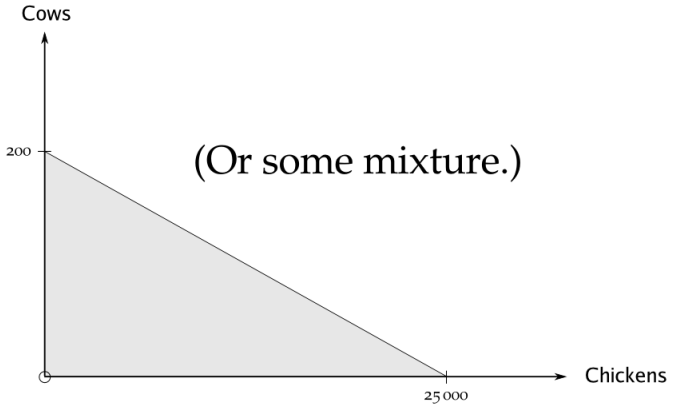
At most 200 cows, or 25 000 chickens.
(Or some mixture.)





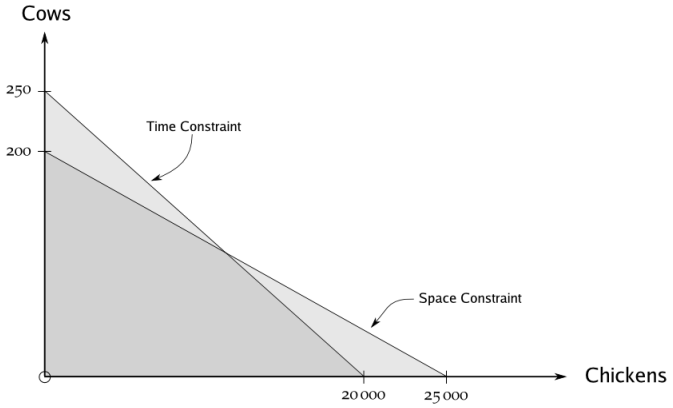






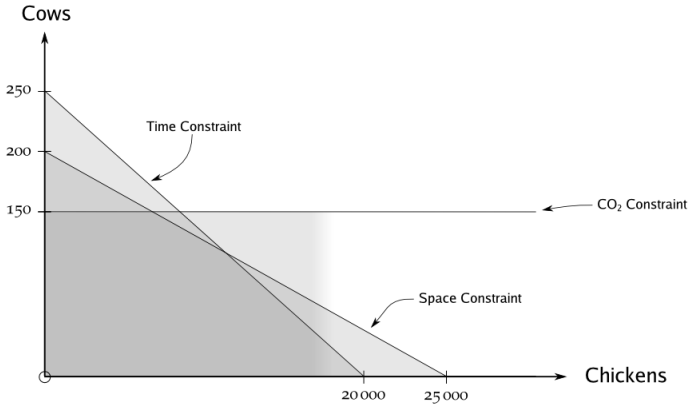
Finite Time

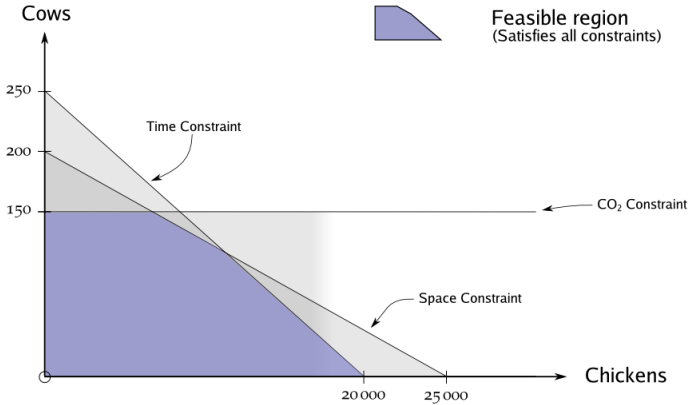
At most he can tend to 200 Cows,
or 20 000 chickens
(Or some mixture.)





He may keep at most 150 cows.

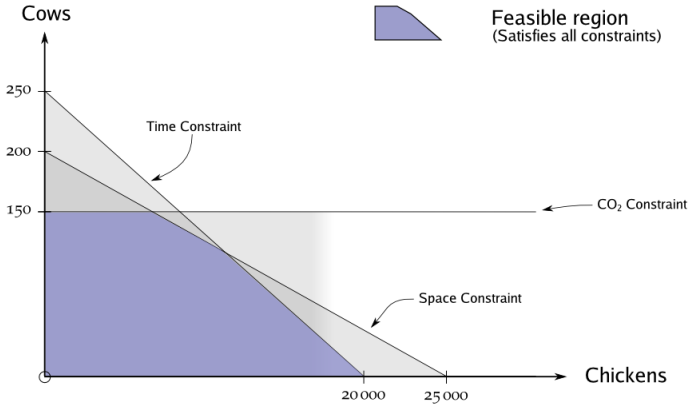


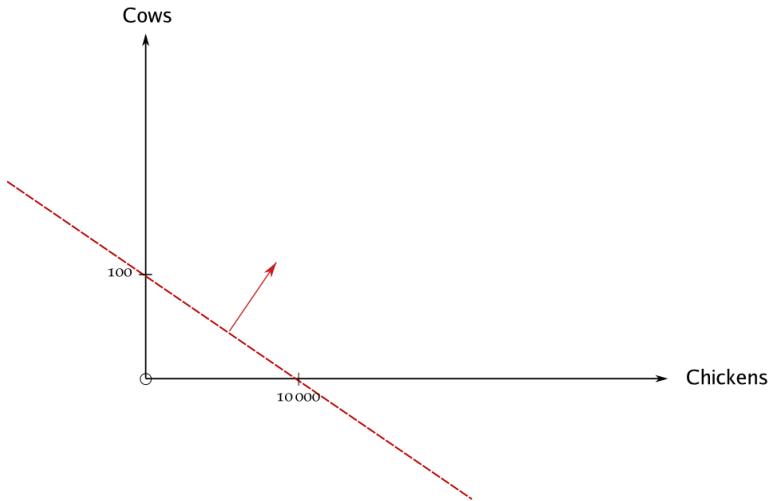


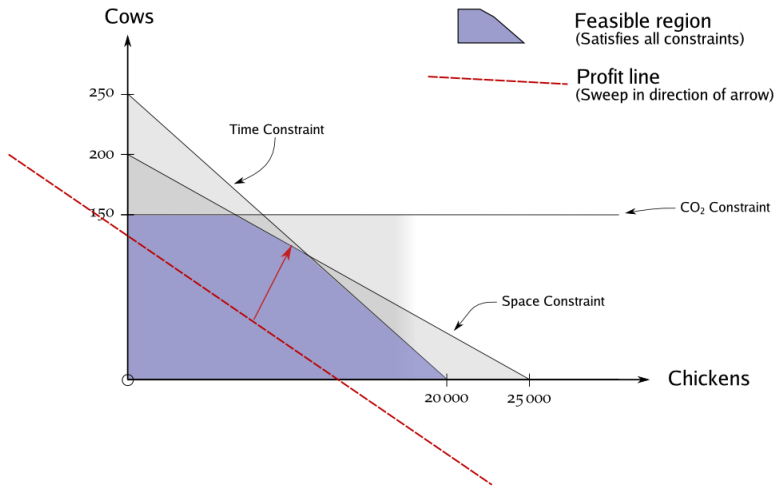
Profit!

For each Cow, we make \$100

For each Chicken, we make \$1







Primal Problem:*Maximize:*

$$f([x_0 \ x_1]) = [11 \ 9] \cdot [x_0 \ x_1]$$

Subject to:

$$x_0 \geq 0.0$$

$$x_1 \geq 0.0$$

$$x_0 + x_1 \leq 10$$

Dual Problem:*Minimize:*

$$f([y_0]) = 10y_0$$

Subject to:

$$y_0 \geq 0.0$$

$$y_0 \geq 9$$

$$y_0 \geq 11$$

