

$$\begin{bmatrix} 1 & 3 & 4 & 14 \\ 2 & -3 & 2 & 10 \\ 3 & -1 & 1 & 9 \end{bmatrix} \xrightarrow{\substack{-2R_1+R_2 \rightarrow R_2 \\ -3R_1+R_3 \rightarrow R_3}} \begin{bmatrix} 1 & 3 & 4 & 14 \\ 0 & -9 & -6 & -18 \\ 0 & -10 & -11 & -33 \end{bmatrix}$$

$$\xrightarrow{R_2/3 \rightarrow R_2} \begin{bmatrix} 1 & 3 & 4 & 14 \\ 0 & 3 & 2 & 6 \\ 0 & -10 & -11 & -33 \end{bmatrix} \rightsquigarrow \begin{bmatrix} 1 & 3 & 4 & 14 \\ 0 & 3 & 2 & 6 \\ 0 & 0 & -13 & -31 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 3 & 4 & 14 \\ 2 & -3 & 2 & 10 \\ 3 & -1 & 1 & 9 \end{bmatrix} \xrightarrow[\substack{-4R_3 + R_1 \rightarrow R_1 \\ -2R_3 + R_2 \rightarrow R_2}]{\substack{\text{pivot}}} \begin{bmatrix} -11 & 7 & 0 & -22 \\ -4 & -1 & 0 & -8 \\ 3 & -1 & 1 & 9 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 3 & 4 & 14 \\ 2 & -3 & 2 & 10 \\ 3 & -1 & 1 & 9 \end{bmatrix} \xrightarrow[\substack{R_2 + (-3)R_1 \rightarrow R_2}]{R_2 + R_1 \rightarrow R_1} \begin{bmatrix} 3 & 0 & 6 & 24 \\ 2 & -3 & 2 & 10 \\ -7 & 0 & -1 & -17 \end{bmatrix}$$

3.3: Example 2

DECA

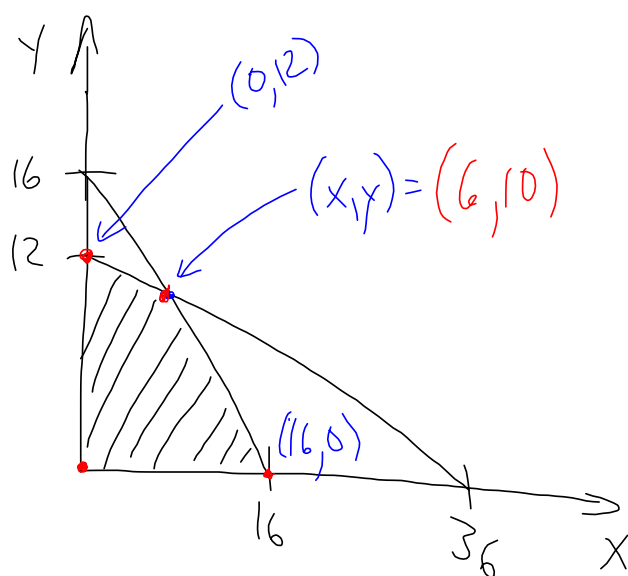
suppose 5 pigs \Rightarrow cost
7 goats $25(7) + 75(5)$
 $25x + 75y \leq 900$

4-H member, raise goats + pigs

$x + y \leq 16$
 \rightarrow wants no more than 16 animals

{ It costs \$25 to raise a goat
" \$75 " pig
She has \$900 to spend

Constraints
 $x \geq 0$
 $y \geq 0$



$x + y = 16$		$25x + 75y = 900$	
x	y	x	y
0	16	0	12
16	0	36	0

Each goat sold gives \$12 of profit
" pig " \$40 "

Goal: Maximize the profit. $P = 12x + 40y$

Variables: Let x be the number of goats
" y " " " pigs

x	y	P

corner	Profit = $12x + 40y$
(16,0)	192
(6,10)	472
(0,12)	480

The max profit is \$480 obtained by raising 12 pigs and no goat.