

Exam 1

* calculator

* no notes

$$0.2x + 0.2y \leq 300 \Rightarrow 2y + 2y \leq 3000 \Rightarrow x + y \leq 1500$$

$$0.6x + 0.2y \leq 720 \Rightarrow 3x + y \leq 3600$$

$$0.04x + 0.08y \leq 100 \Rightarrow 4x + 8y \leq 10,000$$

$$x + 2y \leq 2500$$

$$x_1 + x_2 \leq 1500$$

$$3x_1 + x_2 \leq 3600$$

$$x_1 + 2x_2 \leq 2500$$

$$R = .15x + .2y$$

Objective
Function

$$z = .15x + .2x_2$$

$$-.15x_1 - .2x_2 + z = 0$$

Slack variables

$$\begin{array}{cccccc}
 x_1 & x_2 & s_1 & s_2 & s_3 & z \\
 x_1 + x_2 + s_1 + 0s_2 + 0s_3 + 0z = 1500 \\
 3x_1 + x_2 + s_2 = 3600 \\
 x_1 + 2x_2 + s_3 = 2500 \\
 -.15x_1 - .2x_2 + z = 0
 \end{array}$$

x_1	x_2	s_1	s_2	s_3	z	
1	1	1	0	0	0	1500
3	1	0	1	0	0	3600
1	2	0	0	1	0	2500
-15	-2	0	0	0	1	0

$1500 \div 1 = 1500$
 $3600 \div 1 = 3600$
 $2500 \div 2 = 1250$

-3 -4

indicators

20 → First pivot

$$\begin{array}{l}
 \cancel{-2R_1 + R_3 \rightarrow R_1} \\
 \underline{\underline{2R_1 - R_3 \rightarrow R_1}}
 \end{array}
 \left[\begin{array}{cccccc|c}
 1 & 0 & 2 & 0 & -1 & 0 & 500 \\
 3 & 1 & 0 & 1 & 0 & 0 & 3600 \\
 1 & 2 & 0 & 0 & 1 & 0 & 2500 \\
 -15 & -2 & 0 & 0 & 0 & 1 & 0
 \end{array} \right]$$

$$\begin{array}{l}
 \underline{\underline{2R_2 - R_3 \rightarrow R_2}} \\
 10R_4 + R_3 \rightarrow R_4 \\
 (R_4 + 2R_3 \rightarrow R_4)
 \end{array}
 \left[\begin{array}{cccccc|c}
 1 & 0 & 2 & 0 & -1 & 0 & 500 \\
 5 & 0 & 0 & 2 & -1 & 0 & 4700 \\
 1 & 2 & 0 & 0 & 1 & 0 & 2500 \\
 -5 & 0 & 0 & 0 & 1 & 10 & 2500
 \end{array} \right]$$