

SIMPLEX

ExSimplex: choosebox with examples for Simplex	<pre> 9: 8: 7: 6: 5: 4: 3: 2: 1: Examples For Simplex [[4 5 'Max'] [1 3 [[4 4 'Max'] [1 3 [[4 6 'Max'] [1 3 [[2 1 'Max'] [-1 2 [[0 '1/2' 0 'Max'] [[1 1 2 'Max'] [2 [[3 2 'Min'] [3 4 [[7 2 'Min'] [-1 2 </pre>	<pre> 9: 8: 7: 6: 5: 4: 3: 2: 1: Examples For Simplex [[0 '1/2' 0 'Max'] [[1 1 2 'Max'] [2 [[3 2 'Min'] [3 4 [[7 2 'Min'] [-1 2 [[2 4 4 'Min'] [2 [[1 1 1 'Max'] [1 [[10 12 6 'Max'] [[['4/5' -12 -1 -1 'M </pre>
Simplex: Simplex algorithm for phase 2 max/min problems (10s)	<pre> 5: 4: 3: 2: 1: 4 5 Max 1 3 1500 2 1 1200 1 1 700 Max: 3200 x: 300 400 </pre>	<pre> 5: 4: 3: 2: 1: 4 4 Max 1 3 1500 2 1 1200 1 1 700 Max: 2800 x: 500 200 300 400 </pre>
Simplex: several solutions (9s)	Examp Simp x+F +Dual Table +Tab	Examp Simp x+F +Dual Table +Tab
Simplex: no extremal solution (2s)	<pre> 7: 6: 5: 4: 3: 2: 1: no extremal solution 2 1 Max -1 2 3 -1 1 2 </pre>	<pre> 7: 6: 5: 4: 3: 2: 1: 3 2 Min 3 4 24 3 1 12 6 4 36 Min: 12 x: 4 33 </pre>
Simplex: min problem (8s)	Examp Simp x+F +Dual Table +Tab	Examp Simp x+F +Dual Table +Tab
another example	<pre> 5: 4: 3: 2: 1: 0 1/2 0 Max 1 1/2 -1 200 0 1 0 200 -1 1 2 1100 1 -1 0 900 </pre>	<pre> 5: 4: 3: 2: 1: 1 -1/2 -1 200 0 1 0 200 -1 1 2 1100 1 -1 0 900 Max: 100 x: 0 200 0 x: 0 200 0 x: 1100 200 200 </pre>
Simplex: several solutions (13s)	Examp Simp x+F +Dual Table +Tab	Examp Simp x+F +Dual Table +Tab
x->F: insert solution in linear form (0.1s)	<pre> 6: 5: 4: 3: 2: 1: Max: 260 3 2 4 Max 2 1 2 140 2 2 4 240 3 1 4 300 x: 0 20 0 50 260 </pre>	<pre> 6: 5: 4: 3: 2: 1: 3 2 Min 3 4 24 3 1 12 6 4 36 x: 0 33 12 </pre>
->Dual: dual problem (0.3s)	Examp Simp x+F +Dual Helps Table	Examp Simp x+F +Dual Table +Tab
	<pre> 5: 4: 3: 2: 1: 4 5 Max 1 3 1500 2 1 1200 1 1 700 1500 1200 700 Min 1 2 1 4 3 1 1 5 </pre>	<pre> 5: 4: 3: 2: 1: 2 4 4 Min 2 1 1 1 1 1 1 1 1 2 1 2 1 1 2 Max 2 1 1 2 1 1 2 4 1 1 1 4 </pre>
->Tableaus: generates tableau (0.5s)	Examp Simp x+F +Dual Helps Table	Examp Simp x+F +Dual Helps Table
->Tableaus: generates tableau from min problem (0.8s)	<pre> 4: 3: 2: 1: 4 5 Max 1 3 1500 2 1 1200 1 1 700 -4 -5 0 0 0 0 1 3 1 0 0 1500 2 1 0 1 0 1200 1 1 0 0 1 700 </pre>	<pre> 5: 4: 3: 2: 1: 3 2 Min 3 4 24 3 1 12 6 4 36 -24 -12 -36 0 0 0 3 3 6 1 0 3 4 1 4 0 1 2 </pre>
Ppropose: propose pivot element from tableau (0.9s) first example	Examp Simp x+F +Dual Table +Tab	Examp Simp x+F +Dual Table +Tab
second example	<pre> 6: 5: 4: 3: 2: 1: -4 -5 0 0 0 0 1 3 1 0 0 1500 2 1 0 1 0 1200 1 1 0 0 1 700 2. 2. </pre>	<pre> 6: 5: 4: 3: 2: 1: 0 -1/2 0 0 0 0 0 1 -1/2 -1 1 0 0 0 200 0 1 0 0 1 0 0 200 -1 1 2 0 0 1 0 1100 1 -1 0 0 0 0 1 900 3. 2. </pre>
	Pprop Pivot xEVAL Rci Rci,j Helps	Pprop Pivot xEVAL Rci Rci,j Helps

Pivot: pivot tableau (0.9s) first example	$\begin{array}{l} 2: \\ 1: \end{array} \left[\begin{array}{cccc ccc} 2 & 1 & 0 & 1 & 0 & 1200 \\ 1 & 1 & 0 & 0 & 1 & 700 \\ \hline \frac{2}{3} & 0 & \frac{5}{3} & 0 & 0 & 2500 \\ \hline \frac{1}{3} & 1 & \frac{1}{3} & 0 & 0 & 500 \\ \hline \frac{1}{3} & 0 & \frac{1}{3} & 1 & 0 & 700 \\ \hline \frac{2}{3} & 0 & \frac{1}{3} & 0 & 1 & 200 \end{array} \right]$	$\begin{array}{l} 2: \\ 1: \end{array} \left[\begin{array}{cccc ccc} 0 & 1 & 0 & 0 & 1 & 0 & 200 \\ -1 & 1 & 2 & 0 & 0 & 1 & 1100 \\ \hline 1 & -1 & 0 & 0 & 0 & 1 & 900 \\ \hline 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 100 \\ \hline 1 & 0 & -1 & 1 & \frac{1}{2} & 0 & 300 \\ \hline 0 & 1 & 0 & 0 & 1 & 0 & 200 \\ -1 & 0 & 2 & 0 & -1 & 1 & 900 \\ \hline 1 & 0 & 0 & 0 & 1 & 0 & 1100 \end{array} \right]$
second example	<div>Pprop Pivot xEVAL Rci Rci,j HelpS</div> $\begin{array}{l} 2: \\ 1: \end{array} \left[\begin{array}{cccc ccc} 1 & 1 & 0 & 0 & 1 & 700 \\ \hline \frac{2}{3} & 0 & \frac{5}{3} & 0 & 0 & 2500 \\ \hline \frac{1}{3} & 1 & \frac{1}{3} & 0 & 0 & 500 \\ \hline \frac{1}{3} & 0 & \frac{1}{3} & 1 & 0 & 700 \\ \hline \frac{2}{3} & 0 & \frac{1}{3} & 0 & 1 & 200 \end{array} \right]$ <div>Pprop Pivot xEVAL Rci Rci,j HelpS</div>	<div>Pprop Pivot xEVAL Rci Rci,j HelpS</div> $\begin{array}{l} 2: \\ 1: \end{array} \left[\begin{array}{cccc ccc} -1 & 1 & 2 & 0 & 0 & 1 & 1100 \\ \hline 1 & -1 & 0 & 0 & 0 & 1 & 900 \\ \hline & & & & & & x:CO 200 01 \\ \hline 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 100 \\ \hline 1 & 0 & -1 & 1 & \frac{1}{2} & 0 & 300 \\ \hline 0 & 1 & 0 & 0 & 1 & 0 & 200 \\ -1 & 0 & 2 & 0 & -1 & 1 & 900 \\ \hline 1 & 0 & 0 & 0 & 1 & 0 & 1100 \end{array} \right]$ <div>Pprop Pivot xEVAL Rci Rci,j HelpS</div>
xEval: evaluate x (0.9s) first example	$\begin{array}{l} 2: \\ 1: \end{array} \left[\begin{array}{cccc ccc} -2 & 0 & \frac{5}{3} & 0 & 0 & 251 \\ \hline \frac{1}{3} & 1 & \frac{1}{3} & 0 & 0 & 50 \\ \hline \frac{2}{3} & 0 & \frac{1}{3} & 1 & 0 & 70 \\ \hline \frac{2}{3} & 0 & \frac{1}{3} & 0 & 1 & 20 \end{array} \right]$	$\begin{array}{l} 2: \\ 1: \end{array} \left[\begin{array}{cccc ccc} 0 & \frac{5}{3} & 0 & 0 & 2500 \\ \hline 1 & \frac{1}{3} & 0 & 0 & 500 \\ \hline 0 & \frac{1}{3} & 1 & 0 & 700 \\ \hline 0 & \frac{1}{3} & 0 & 1 & 200 \end{array} \right]$
second example	<div>Pprop Pivot xEVAL Rci Rci,j HelpS</div> $\begin{array}{l} 2: \\ 1: \end{array} \left[\begin{array}{cccc ccc} -4 & -5 & 0 & 0 & 0 & 0 \\ \hline 1 & 3 & 1 & 0 & 0 & 1500 \\ \hline 2 & 1 & 0 & 1 & 0 & 1200 \\ \hline 1 & 1 & 0 & 0 & 1 & 700 \end{array} \right]$ <div>Pprop Pivot xEVAL Rci Rci,j HelpS</div>	<div>Pprop Pivot xEVAL Rci Rci,j HelpS</div> $\begin{array}{l} 2: \\ 1: \end{array} \left[\begin{array}{cccc ccc} 0 & 0 & \frac{1}{2} & 0 & \frac{7}{2} & 3200 \\ \hline 0 & 1 & \frac{1}{2} & 0 & \frac{1}{2} & 400 \\ \hline 0 & 0 & \frac{1}{2} & 1 & \frac{5}{2} & 200 \\ \hline 1 & 0 & \frac{1}{2} & 0 & \frac{3}{2} & 300 \end{array} \right]$ <div>Pprop Pivot xEVAL Rci Rci,j HelpS</div>
Tableaus: contains calculated tableaus	<div>TEXT</div> <div>SIMPLEX ALGORITHM</div> <div>OK</div>	<div>TEXT</div> <div>EXAMPLES - + [i,j] CHOOSEBOX</div> <div>OK</div>
HelpSIMPLEX: help	<div>STANDARD MAXIMUM/MINIMUM PROBLEM</div> <div>ci*xi+...+cn*xn=Max(Min)</div> <div>a11*xi+...+a1n*xn(≥)b1 ...</div> <div>a11*xi+...+a1n*xn(≤)b1 ...</div> <div>With xk,bk≥0</div> <div>INPUT AT HP49/50: [i,j]=</div> <div>[[ci...cn Max(Min)]</div> <div>[[a11...a1n b1] ...</div> <div>[[a11...a1n b1]]</div> <div>GRAPH</div> <div>OK</div>	<div>EXAMPLES - + [i,j] CHOOSEBOX</div> <div>Simplex [i,j] + [i,j] Max/Min: M</div> <div>x:[] SOLUTIONS</div> <div>TABLEAUS ARE STORED</div> <div>AS LIST IN 'Tableaus'</div> <div>[i,j] x:[] + [i,j] [i] val</div> <div>INSERT x IN LINEAR FORM</div> <div>[i,j] + [i,j]' CONVERTS TO</div> <div>DUAL PROBLEM (Max+Min)</div> <div>Tableaus LIST OF TABLEAUS</div> <div>CALCULATED BY Simplex</div> <div>+Tableau [i,j] + [i,j] [i,j]</div> <div>GRAPH</div> <div>OK</div>
HelpSIMPLEX: help	<div>+tableau [i,j] + [i,j] [i,j]</div> <div>GENERATES TABLEAU FROM</div> <div>MAX PROBLEM. A Min</div> <div>PROBLEM IS CONVERTED</div> <div>TO MAX PROBLEM</div> <div>Ppropose [i,j] + [i,j] [i,j]</div> <div>PROPOSE PIVOT POSITION</div> <div>c=min(c_k),r=min(b_k/a_{k,j})</div> <div>UNTIL MAX IS REACHED</div> <div>Pivot [i,j] [i,j] [i,j] + [i,j] [i,j]</div> <div>PIVOT WITH ELEMENT IN</div> <div>ROW r AND COLUMN c</div> <div>GRAPH</div> <div>OK</div>	<div>Pivot [i,j] [i,j] [i,j] + [i,j] [i,j]</div> <div>PIVOT WITH ELEMENT IN</div> <div>ROW r AND COLUMN c</div> <div>[i,j] + [i,j] :x:[]</div> <div>EVALUATE x FROM TABLEAU</div> <div>[i] Factor i + [i]</div> <div>MULTIPLY ELEMENTS IN ROW</div> <div>i BY Factor (=RCI)</div> <div>[i] Factor i,j + [i]</div> <div>MULTIPLY ELEMENTS IN</div> <div>MATRIX ROW i BY Factor</div> <div>AND ADD TO ROW j (=RCIJ)</div> <div>GRAPH</div> <div>OK</div>