

Chapter 8

Systems of Equations and Inequalities

Figure 8.1.1: graph of 2 parallel lines

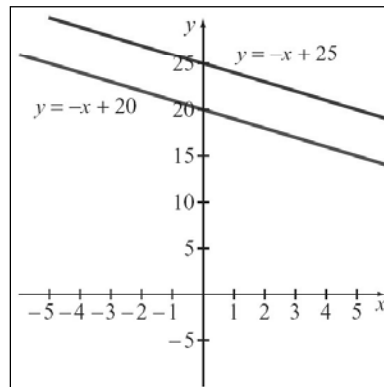
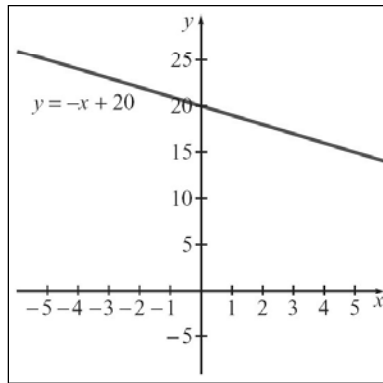


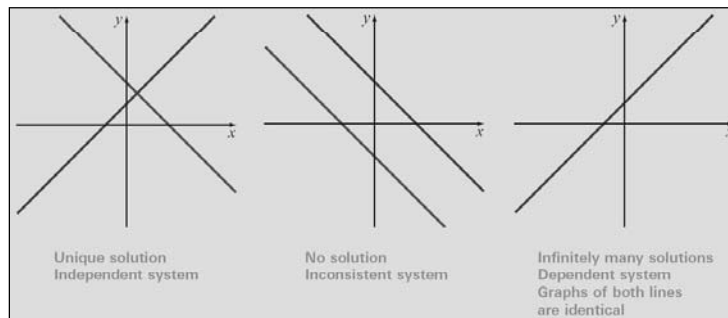
Figure 8.1.2: graph of line
(2 equations with same graph)



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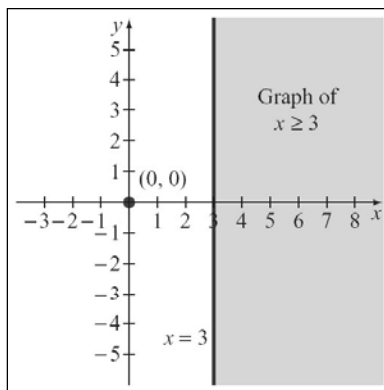
Figure 8.1.3: illustration of graphs corresponding to the number of solutions of a system of 2 linear equations (one, zero, infinitely many)



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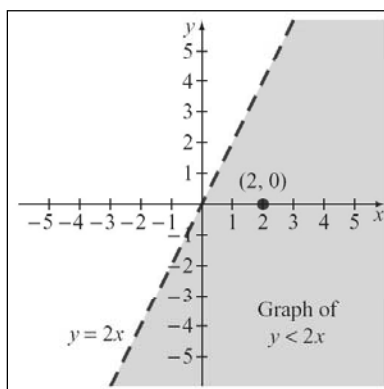
Figure 8.1.4: graph of the solution set of a linear inequality



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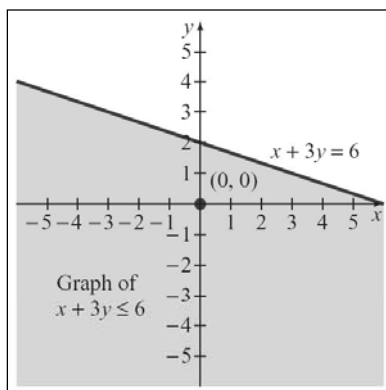
Figure 8.1.5: graph of the solution set of a linear inequality



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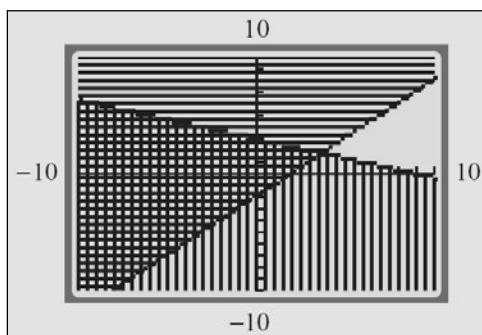
Figure 8.1.6: graph of the solution set of a linear inequality



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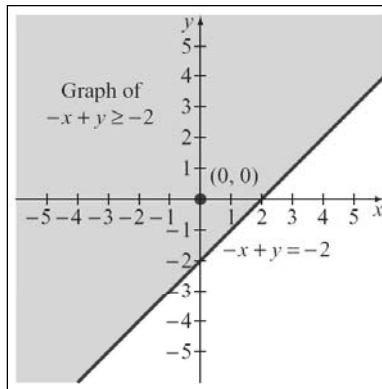
Figure 8.1.7: calculator screen showing the graph of a linear system



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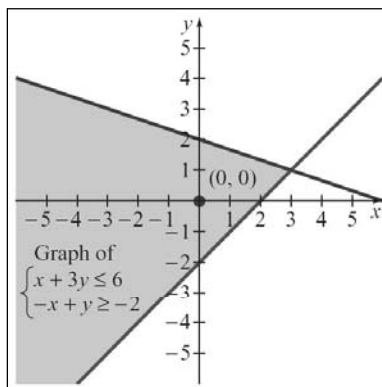
Figure 8.1.8: graph of the solution set of a linear inequality



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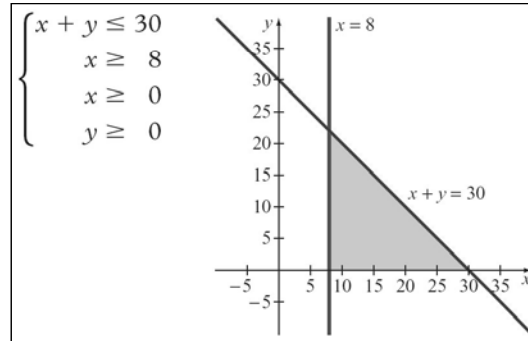
Figure 8.1.9: graph of the solution set of system of linear inequalities



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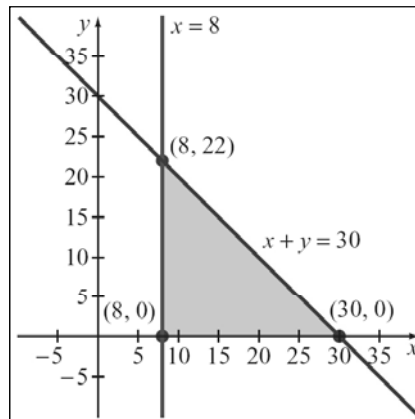
Figure 8.1.10: graph showing the constraints in a linear programming application



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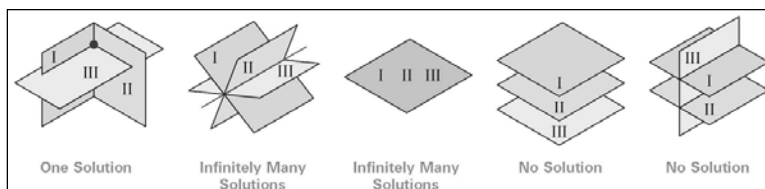
Figure 8.1.11: graph showing the constraints in a linear programming application



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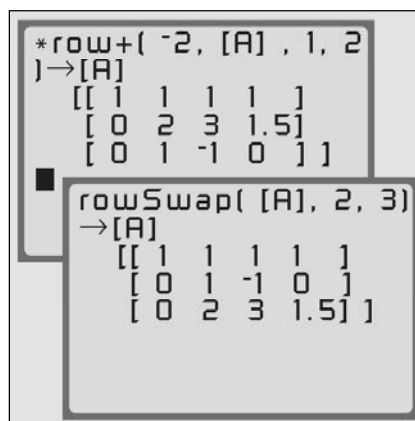
Figure 8.2.1: illustration of the ways in which three planes can intersect, corresponding to the nature of the solution(s) of the corresponding system of three linear equations



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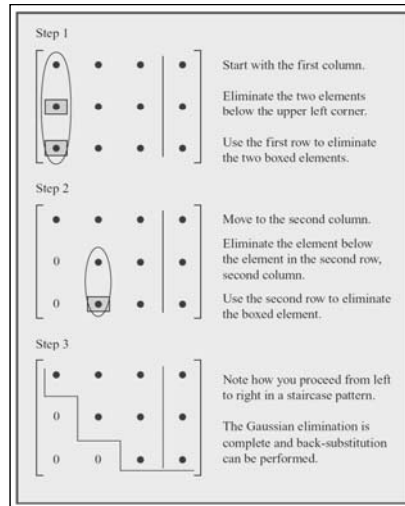
Figure 8.3.1: 2 calculator screens showing row operations on matrices



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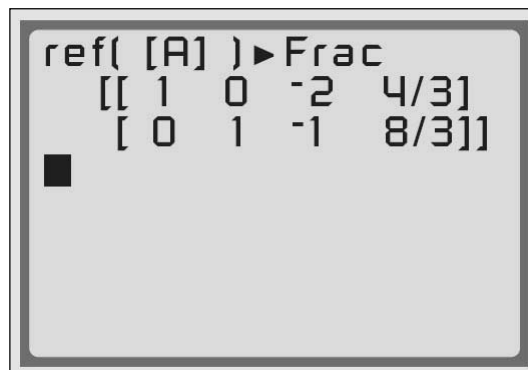
Figure 8.3.2: *Gaussian Elimination*



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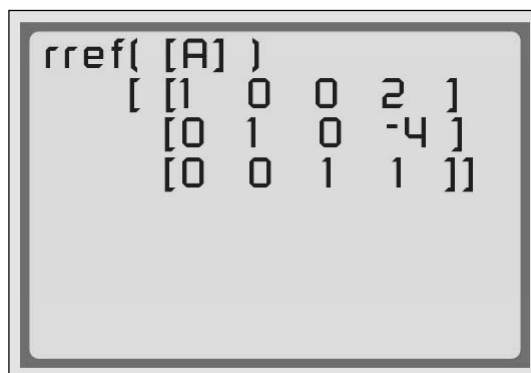
Figure 8.3.3: calculator screen showing row-echelon form of a matrix



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Figure 8.3.4: calculator screen showing reduced row-echelon form of a matrix

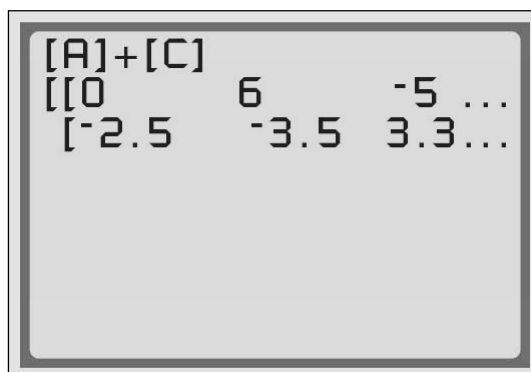


```
rref( [A] )  
[ [1  0  0  2  1  
  [0  1  0 -4 ]  
  [0  0  1  1  1]
```

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Figure 8.4.1: calculator screen showing matrix addition

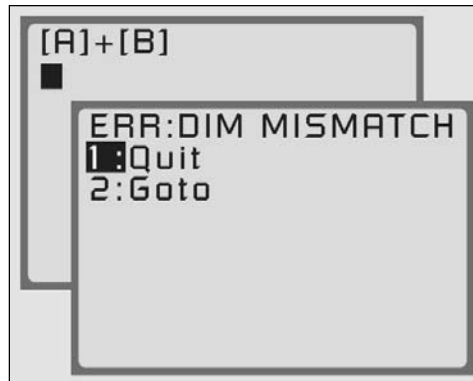


```
[A]+[C]  
[[0  6  -5 ...  
 [-2.5 -3.5 3.3...
```

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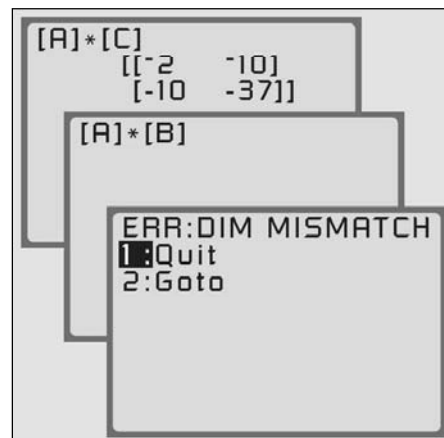
Figure 8.4.2: 2 calculator screens showing error message after attempting to add matrices of different dimensions



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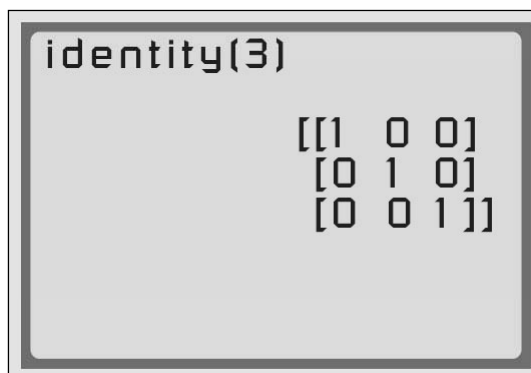
Figure 8.4.3: 2 calculator screens showing error message after attempting to multiply matrices with incompatible dimensions



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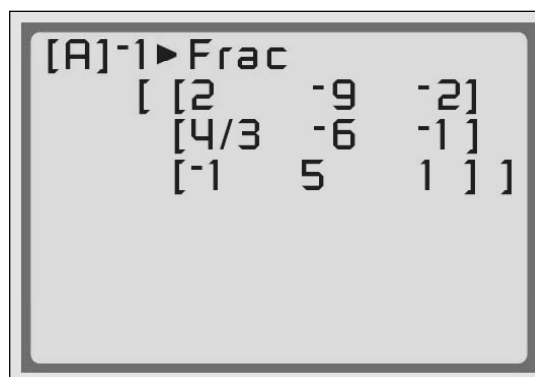
Figure 8.5.1: calculator screen showing an identity matrix



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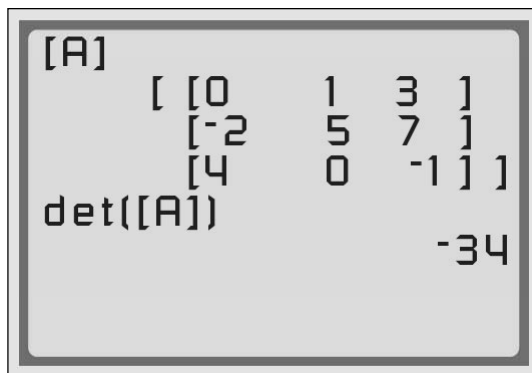
Figure 8.5.2: calculator screen showing the inverse of a matrix



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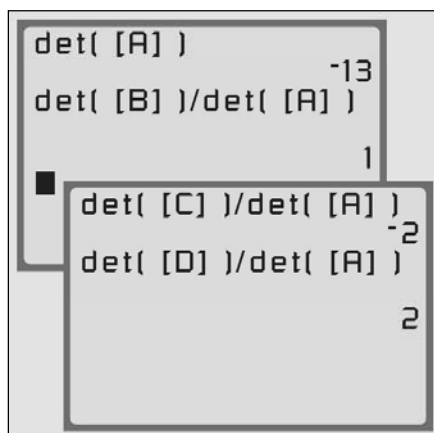
Figure 8.6.1: calculator screen showing the determinant of a matrix



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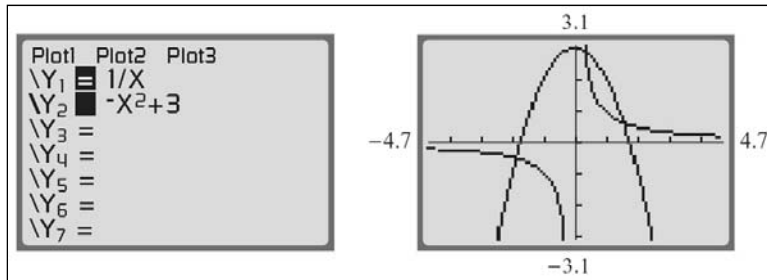
Figure 8.6.2: 2 calculator screens showing the use of a calculator in applying Cramer's Rule



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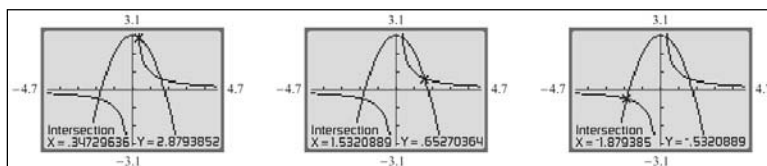
Figure 8.8.1: 2 calculator screens showing equations and graphs for a nonlinear system of equations



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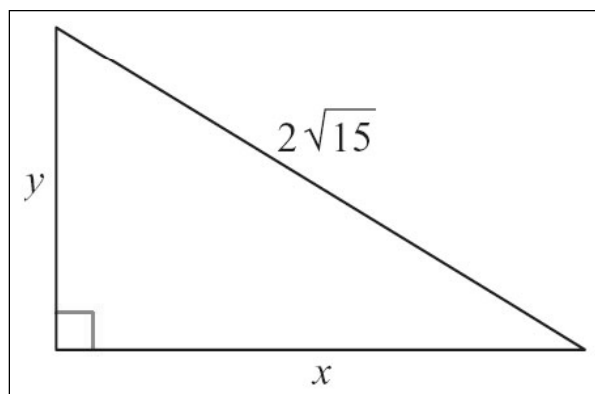
Figure 8.8.2: 3 calculator screens showing use of INTERSECT feature to solve nonlinear system of equations



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Figure 8.8.3: example of a right triangle



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