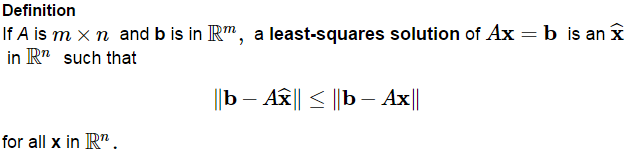
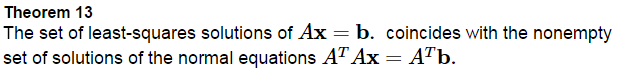
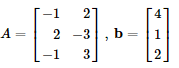
We will now look at the case where has no solution. What would be “closest” possible solution ? This is called the Least-Squares problem, and it mirrors our Best-Approximation Theorem from 6.3.

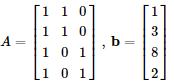


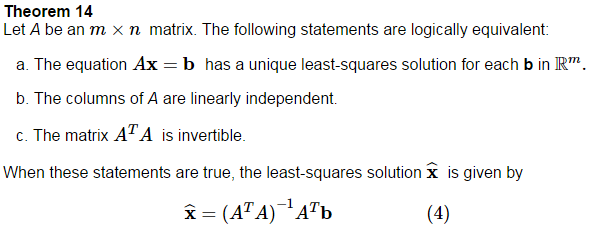


Find a least-squares solution of the inconsistent system  for



Find a least-squares solution of the inconsistent system  for



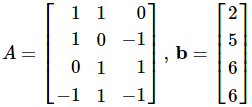


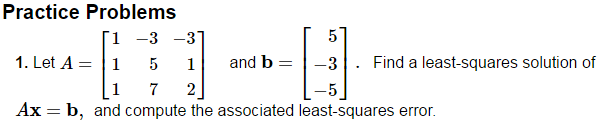
The distance from **b** to *A***x** is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_

Find the least-squares error of Ex 1.

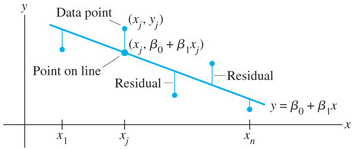
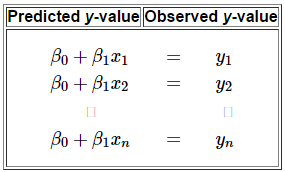
If the columns of A are orthogonal, the least-squares solution is even easier to find.

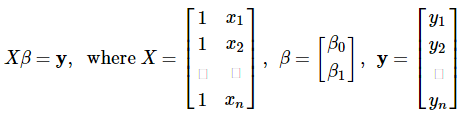
Verify the columns of A are orthogonal and find a least-squares solution of.





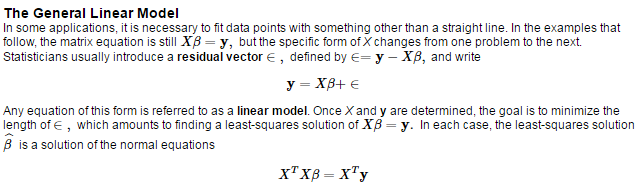
Now we’re going to look at finding a best-fit line for a set of data points, also known as linear-regression.



Find the equation  of the least-squares line that best fits the data points. 

Find the quadratic regression equation  of the least-squares line that best fits the data points. .



A certain experiment produces the data (1, 7.9), (2, 5.4), and (3, -0.9). Describe the model that produces a least-squares fit of these points by a function of the form 