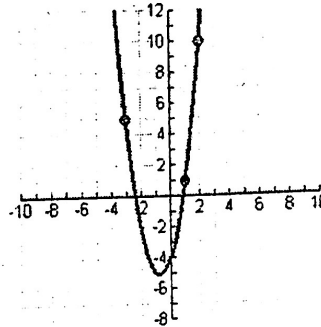


EQ: How can we use matrices to solve real world problems?

Standard: Students will use matrices to formulate and solve problems.

A. Find the equation of the graph described in each question.

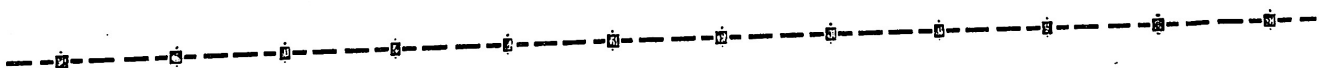
1. Consider the following graph. The parabola passes through the points $(-3, 5)$, $(1, 1)$, and $(2, 10)$. Write a system of equations for this graph. Solve the system and write an equation for the parabola.



2. A videotape of the path of a ball thrown by a baseball player was analyzed with a grid covering the TV screen. The tape was paused three times, and the position of the ball was measured each time. The coordinates obtained are shown in the table (x and y are measured in feet).

Horizontal distance, x	Height, y
0	5.0
15	9.6
30	12.4

Use a system of equations to find the equation of the parabola that passes through the points.



- B. Write a system of equations as an algebraic representation for the problem situations, and then solve the system using matrices and your graphing calculator. You must show both your system and your answer, with appropriate description, to receive credit.

1. In a factory there are three machines A, B, and C. When all three are running, they produce 222 suitcases per day. If A and B work but C does not, they produce 159 suitcases per day. If B and C work but A does not, they produce 147 suitcases per day. What is the daily production of each machine?

2. The sum of three numbers is 57. The second is 3 more than the first. The third is 6 more than the first. Find the numbers.
3. Donny, Dan, and Matt stopped at Cheesy Cheeseburger after class. Donny bought two cheeseburgers, one large drink, and two orders of fries for \$3.95. Dan bought three cheeseburgers and two large drinks for \$4.05. Matt bought one cheeseburger, one large drink, and one order of fries for \$2.47. What is the price of each cheeseburger, large drink, and order of fries?
4. The sum of three numbers is 26. Twice the first minus the second is 2 less than the third. The third is the second minus three times the first. Find the numbers.
5. In triangle ABC, the measure of angle B is 2° more than three times the measure of angle A. The measure of angle C is 8° more than the measure of angle A. Find the angle measures.
6. Jasper picked strawberries on three days. He picked a total of 87 quarts. On Tuesday he picked 15 quarts more than on Monday. On Wednesday he picked 3 quarts fewer than on Tuesday. How many quarts did he pick each day?
7. The sum of three integers is 45. The sum of the first two integers is nine more than the third integer. The sum of the first and third integer is twice the second. Find the integers.
8. Patrick has stashed away \$16.60 in nickels, dimes, and quarters in his sock drawer. The sum of the nickels and dimes is four less than three times the number of quarters. The total number of coins is 136. Find the number of each kind of coin.
9. A 40-ft pipe is cut into three pieces. The largest piece is three times longer than the smallest piece and the other piece is 2 ft shorter than the largest piece. Find the length of each piece.
10. The University of Georgia and Florida State University scored a total of 39 points during the 2003 Sugar Bowl. The points came from a total of 11 different scoring plays, which were a combination of touchdowns, extra-point kicks, and field goals, worth 6, 1 and 3 points respectively. The same numbers of touchdowns and field goals were scored. How many touchdowns, extra-point kicks, and field goals were scored during the game?