Bill and Ted are throwing snowballs into the parking lot from their third story balcony with initial height of 24 feet and upward velocity of 48 feet per second.

Write a function rule that will represent the given scenario for height as a function of time.

Without graphing, find the time when the snowball reaches its maximum height?

What is the maximum height?

Mike owns his own Bungee Jump Business. He has calculated the Income for his company by the following function $I(p) = 50p - p^2$. The following graph shows income as function of price for Mike's business where ***p*** is the ticket price and ***I*** is the income.

Without graphing, find the price of the ticket that will yield a profit of zero dollars?

What price should Mike charge to maximize his profit?

Based on this model what is Mike's maximum profit?

Alex hit a baseball 5 feet off the ground. After 5 seconds the ball had a height of 240 feet. Find the initial upward velocity of the baseball. Write an equation for the path of the baseball over time.

Without using graphing technology, sketch the pattern of graphs you would expect for the next set of quadratics functions. Justify your reasoning.

$y = -x^2 + 8x$

$y = x^2 + 6x - 2$

Match the equation to the graph and be prepared to explain your answer.

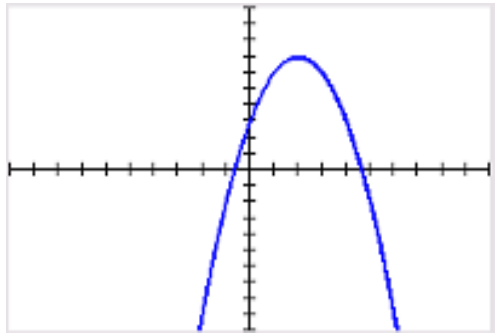
Rule I $y = x^2 - 4x$

Rule II $y = x^2 + 3x - 1$

Rule III $y = -x^2 + 4x + 3$

Rule IV $y = -4x^2 + 2x + 3$

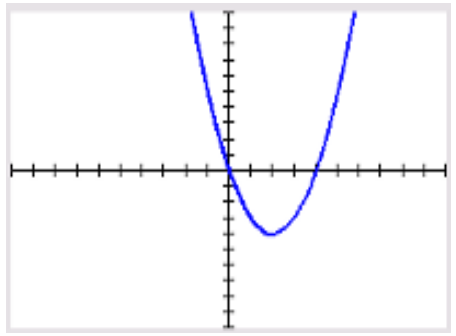
Graph A



Rule

Explain

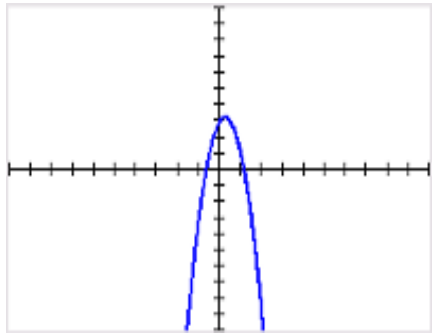
Graph B



Rule

Explain

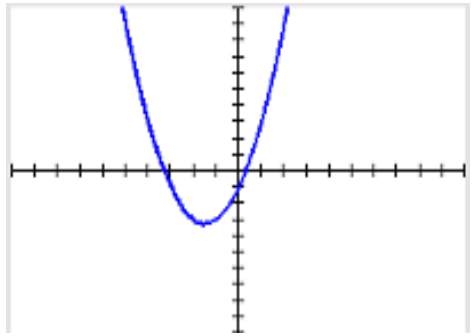
Graph C



Rule

Explain

Graph D



Rule

Explain

For each function, explain what you can learn about the shape and location of its graph by looking at the coefficients and constant term in the rule.

$h = 15 - 16t^2$

$h = 2 + 40t - 16t^2$

$h = 0.004x^2 - x + 80$

$h = 0.05s^2 + 1.1s$