

## Algebra 9-4 Quadratic Equations And Projectiles

1. Playing with my son's toy rocket, I came up with the equation  $h = -6t^2 + 24t + 1$  where  $h$  describes the height of the foam rocket above the ground after  $t$  seconds.
  - a.) From the equation, can you determine what the height of the rocket is before it is shot off? \_\_\_\_\_
  - b.) Graph the equation on your calculator. Use a window of  $x\text{-min} = 0$ ,  $x\text{-max} = 6$ ,  $y\text{-min} = 0$ , and  $y\text{-max} = 40$ .
  - c.) Using your trace key, find a close approximation for the maximum height of the foam rocket.  
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  - d.) Using your trace key, find a close approximation for how long the rocket is in the air until it hits the ground.  
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2. When hitting a ball it reaches its maximum height at 3 seconds at a height of 94 feet. At 2 seconds, the ball is 70 feet above the ground. What must be the height of the ball at 4 seconds?  
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3. Consider the graph below of a bullet shot out of a gun.
  - a.) What is the greatest height the ball reaches? \_\_\_\_\_
  - b.) How high is the bullet at .4 seconds? \_\_\_\_\_
  - c.) How long is the bullet in the air? \_\_\_\_\_
  - d.) At about what time is the bullet 1500 meters in the air? \_\_\_\_\_

