

## Applications of Quadratic Equations

### Punted Football

The height of a punted football can be modeled with the quadratic equation  $h = -0.01x^2 + 1.18x + 2$ . The horizontal distance in feet from the point of impact with the kicker's foot is  $x$ , and the height of the ball in feet is  $h$ .

- a. Find the vertex of the graph of the function.
- b. What is the maximum height of the punt?
- c. The nearest defensive player is 5 ft horizontally from the point of impact. How high must the player reach to block the punt?

### Physics

The equation for the motion of a projectile fired straight up at an initial velocity of 64 ft/s is  $h = 64t - 16t^2$  where  $t$  is the time in seconds and  $h$  is the height in feet. Find the time the projectile needs to reach its maximum height. How high will it go?