



3. Robert threw a rock off a bridge into the river. The distance from the rock to the river is modeled by the equation  $h = -16t^2 - 16t + 60$ , where  $h$  is the height in feet and  $t$  is the time in seconds.

a. How high above the river will the rock be 1 second after Robert throws it?

b. How long will it take for the rock to hit the surface of the water?

4. The height of a rocket launched upward from a 160-foot cliff is modeled by  $h = -16t^2 + 48t + 160$ , where  $h$  is the height in feet and  $t$  is the time in seconds.

a. How long will it take for the rocket to reach its maximum height?

b. How high will the rocket go?

5. The height of a rock thrown off a cliff can be modeled by the equation  $h = -16t^2 - 8t + 120$ , where  $h$  is the height in feet and  $t$  is the time in seconds.

a. How high above the ground is the rock 2 seconds after it is thrown?

b. How long does it take the rock to reach the ground?

6. During a game of golf, Kayley hits her ball out of a sand trap. The height of the golf ball is modeled by the equation  $h = -16t^2 + 20t - 4$ , where  $h$  is the height in feet and  $t$  is the time in seconds since the ball was hit.
- What does the  $-4$  in the equation tell you about the situation?
  - Find how long it takes Kayley's golf ball to hit the ground.
  - How high was Kayley able to hit the golf ball? (This is tricky, think about the situation.)
  - How long after Kayley hit the ball will it reach its highest point?