

1. Find the roots of the quadratic equation $(x - 5)(x - 8) = 7$.

2. Express $f(x) = -\frac{3}{4}x^2 - 15x + 78$ in the form $a(x - h)^2 + k$.

3. Find the maximum or minimum value of $g(x) = -2x^2 + 16x - 24$ and state clearly whether it is a maximum or a minimum.

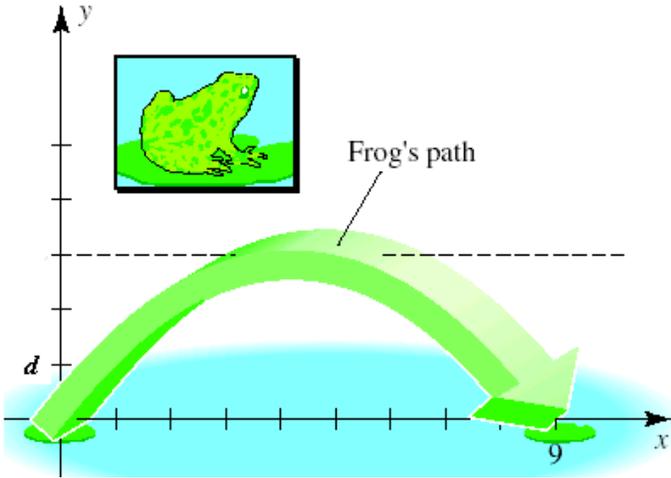
4. An object is thrown upwards at time $t = 0$. The object's height h in feet above the ground t seconds later is given by the formula,

$$h = -16t^2 + 3t + 8.$$

Determine the exact number of seconds t required for the object to return to the ground.

5. Determine the range of the function $h(x) = 6x^2 + 3x + 6$.

6. Flights of leaping animals typically have parabolic paths. The figure below illustrates a frog jump. The length of a leap is 9 feet, and the maximum height off the ground is $3d$ feet. Find an equation in the form $y = a(x - h)^2 + k$ for the path of the frog, if $d = 1.5$ feet in the figure.



7. A business forms a model of its watch sales via a pricing function $p(n) = 400 - \frac{50}{8}n$, where n is the number of watches sold and $p(n)$ is the sales price in dollars per watch.

a) Find the revenue function $R(n)$ for this business.

b) Find the number n sold which will maximize revenue.

c) What is the maximum revenue?