Interpreting nonlinear expressions

$$C(q) = 2q + 155\sqrt{q} + 2{,}000$$

A company manufactures bookcases. The function above gives the cost $C(q)$, in dollars, of producing q bookcases. How many dollars is the fixed cost of production before any bookcases are produced?

The following equation shows the height, h, in meters above the ground of a football t seconds after a particular kick.

$$h = 0.3 + 5.5t - 4.9t^2$$

What was the height of the football at the moment of the kick?

meters

$$B(n) = 2^n$$

A binary code word of length n is a string of 0's and 1's with n digits. For example, 1001 is a binary code word of length 4. The number of binary code words, $B(n)$, of length n, is shown above. If the length is increased from n to $n + 1$, how many more binary code words will there be?

A 2

B 2^n

C 2^{n+1}

D 4^n

Interpreting nonlinear expressions

$$F(t) = 1{,}500(1.045)^t$$

The future value, $F(t)$, of an investment after t years is given by the function defined above. What is the initial value of the investment?

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$$R(q) = -0.31(q - 260)^2 + 9500$$

A shoe manufacturer determines that its monthly revenue, $R(q)$, in dollars, is given by the function defined above, where q is the number of pairs of shoes sold each month. What is the maximum value of the company's monthly revenue in dollars?