### Lesson 17 Practice Problems

1. Select **all** the equations that have 2 solutions.
2. A frog jumps in the air. The height, in inches, of the frog is modeled by the function , where is the time after it jumped, measured in seconds.

* Solve . What do the solutions tell us about the jumping frog?

1. A tennis ball is hit straight up in the air, and its height, in feet above the ground, is modeled by the equation , where is measured in seconds since the ball was thrown.
   1. Find the solutions to the equation .
   2. What do the solutions tell us about the tennis ball?
2. Rewrite each quadratic expression in standard form.

* (From Unit 7, Lesson 10.)

1. Find the missing expression in parentheses so that each pair of quadratic expressions is equivalent. Show that your expression meets this requirement.
   1. and
   2. and
   3. and

* (From Unit 7, Lesson 10.)

1. The number of downloads of a song during a week is a function, , of the number of weeks, , since the song was released. The equation  defines this function.
   1. What does the number 100,000 tell you about the downloads? What about the ?
   2. Is meaningful in this situation? Explain your reasoning.

* (From Unit 5, Lesson 9.)

1. Consider the equation .
   1. Identify the values of , , and that you would substitute into the quadratic formula to solve the equation.
   2. Evaluate each expression using the values of , , and .
   * ​​​​
   * ​​​​​
   1. The solutions to the equation are  and . Do these match the values of the last expression you evaluated in the previous question?

* (From Unit 7, Lesson 16.)
  1. Describe the graph of . (Does it open upward or downward? Where is its -intercept? What about its -intercepts?)
  2. Without graphing, describe how adding to would change each feature of the graph of . (If you get stuck, consider writing the expression in factored form.)
     1. the -intercepts
     2. the vertex
     3. the -intercept
     4. the direction of opening of the U-shape graph
* (From Unit 6, Lesson 13.)



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