

Name \_\_\_\_\_

1. (6 points) Dorothy emptied a bucket of water upon the Wicked Witch of the West who immediately began to melt. If the Scarecrow only had a brain, he would calculate that the witch's height could now be given by the function  $h(t) = 63(0.91)^t$ , where  $t$  is measured in seconds since the water was first thrown upon the witch, and  $h(t)$  is measured in inches.
  - (a) At time  $t = 11$  seconds, how tall was the witch and how quickly was her height changing? Each answer should be correctly rounded off to one place after the decimal point and include proper units.

2. (4 points) For one package mailing company, the cost to send a package is a function of its weight. Let  $C(w)$  represent the cost, in dollars, of sending a package which weighs  $w$  pounds.

(a) Interpret the statements  $C(13) = 6$  and  $C'(13) = 0.3$  in terms of packages, weights, and costs. Your final answer should be in the form of one or more English sentences which can be easily understood by a person who knows very little math. You should especially avoid calculus terms such as derivative, rate of change, function, slope, tangent line, etc.

(b) Use the information given in part (a) to estimate the cost of sending a 15 pound package.

(c) Use the information given in part (a) to estimate the cost of sending a 12 pound package.