MASTERING MATHEMATICS WITH PLYMOUTH UNIVERSITY

## SKE+ Learning together through Problem Solving

## An invitation to do some mathematics

## Strand G: Relations, Functions and Graphs – G4 Functions

### Drunk or not

After drinking alcoholic beverages, the amount of alcohol **A** in a person's bloodstream can be described by the function

$$\mathbf{A}(\mathrm{t}) = -0.015t^3 + 1.058t\,.$$

This represents the approximate alcohol concentration in tenths of a percentage in an average person's bloodstream *t* hours after drinking 8 ounces of alcohol.

**1**. How many hours does it take for the alcohol to completely leave the bloodstream (blood alcohol concentration is zero)?

**2**. At what time is the alcohol concentration the greatest?

**3**. In many places a person is considered legally drunk if their blood alcohol concentration is greater than 0.07%. For how many hours would this person be considered legally drunk?