Due: Tuesday 1/15 at 11:59pm

Write the following class and submit your code using the BlueJ submission system, following the instructions on the previous assignment.

1. (12 points) Create a class `Robot` with two attributes, an integer recording its total distance traveled and a `double` with its current battery level. Your class should implement the following methods:
   - A constructor that takes no arguments. It should set the distance to 0 and the battery level to 3.
   - A method `charge` which takes an integer and increases the battery level by this amount.
   - A method `currentSpeed` which takes no arguments and returns the robot’s current speed. This is calculated by squaring its battery level and multiplying by 2. (Note that the easiest way to square a number on a computer is to multiply it by itself.)
   - A method `moveForward` which takes an integer `dist` giving the distance the robot should move. This method increases the robot’s total distance traveled and also multiplies the battery level by \( \left( 1 - \frac{\text{dist}}{\text{dist}+1} \right) \).
   - A method `estTimeHome` which takes no arguments and returns the time the robot would take to retrace its steps at its current speed. Thus, the return value is the total distance it has traveled divided by the current speed (calculated as described above).

You can test your `Robot` class by taking it through the following steps:

- Create a `Robot`.
- Get its current speed; the value should be 18.
- Have it move forward 9 units.
- Get its current speed; the value should now be slightly less than 0.18 (returned as 0.179999999...).
- Have it calculate its estimated time home; the value should be very slightly over 50.
- Charge it by 5 units.
- Get its current speed; the value should now be 56.18.