EMTH211 Assignment 2

This assignment is **due at 4:00 PM Friday 18 October** and is to be handed through the boxes on Level 4 in the Mathematics & Statistics Department. This assignment is worth **4%** of your final grade. You may work by yourself or with one other person. If you hand in a joint assignment, you will each be given the same mark. Please complete and attach the cover sheet to your assignment before submitting your assignment.

Problem
Consider the simple linear regression model

$$\mathbf{y} = b_0 + b_1\mathbf{x} + \mathbf{e}$$

with OLS estimators $\widehat{b_0}$ and $\widehat{b_1}$. Suppose the variables are transformed as follows: $\mathbf{x}' = s\mathbf{x}+t$ and $\mathbf{y}' = u\mathbf{y} + v$, where s, t, u, and v are non-zero constants. Show that the new OLS estimators $\widehat{b_0'}$ and $\widehat{b_1'}$ for the transformed model

$$\mathbf{y}' = b_0' + b_1'\mathbf{x}' + \mathbf{e}'$$

can be found in terms of the old ones according to:

(i)
$$\widehat{b_0'} = u\widehat{b_0} + v - \frac{tu}{s}\widehat{b_1}$$

(ii)
$$\widehat{b_1'} = \frac{u}{s}\widehat{b_1}.$$

STAPLE this page to the front of your assignment.

EMTH211 – Assignment 2 Cover Sheet

Name(s):	
Student ID(s):	
Tutorial Group(s):	
Signatures(s):	

This assignment MUST be your own work or the work of a pair.
STAPLE this page to the front of your assignment.