Bonus Question 3

Recall that a number a is a *root* of a polynomial $f(x)$ if $f(a) = 0$. This is the same as saying that one can write $f(x) = (x - a)g(x)$ for some polynomial $g(x)$.

So, in a similar fashion, we can say that a number a is a *double root* of a polynomial $f(x)$ if we can write $f(x) = (x-a)^2 g(x)$ for some polynomial $g(x)$.

Prove that:

1. If a is a double root of $f(x)$, then a is a root of $f(x)$ and a is a root of $f'(x)$.

2. The converse of (1): if a is a root of $f(x)$ and a is a root of $f'(x)$, then a is a double root of $f(x)$.

Due: Wednesday July 25th.
Worth: 0.5 % bonus