

## Feedback on the 1st 0C1/1C1 In-Class Test, 2012

The two most common reasons for students losing marks were firstly plain carelessness, for example writing  $+p$  on one line and then copying it as  $-p$  on the next line, and secondly not being able to do simple addition and multiplication of integers and fractions. For example getting 4 for  $4 - (-4)$  and  $\frac{1}{2} \times \frac{1}{3} = \frac{5}{6}$  (unbelievably common error this!). Concerning some individual questions:

1. As usual lots of students forgot the rule that you do divisions before subtractions and wrote

$$31/(7 + 11) - 2 = 31/((7 + 11) - 2) = 31/16$$

rather than

$$31/(7 + 11) - 2 = (31/18) - 2 = (31/18) - (36/18) = -5/18.$$

A second *very common* error was to ignore the instruction to write the answer as an integer or fraction (i.e. in the form  $p/q$  where  $q$  is a natural number and  $p$  an integer), for example writing  $\frac{5}{-18}$  instead of  $\frac{-5}{18}$ . I didn't in fact penalize this but I may well do so in the examination so make sure you get it right then! Similar remarks apply to the instruction to write fractions in their simplest form.

3. Numerous students seem to think that  $(p - (q - 1))$  is the same thing as  $p(q - 1)$ . If you ever were one of this multitude make sure you never will be again. As usual some students lost the marks on this question (and the next) because they ignored the instruction to 'collect terms'.

4. Some students thought that, for example,  $(2 - x)(x + 1)(2 + x)$  was equal to

$$(2 - x)(x + 1) + (x + 1)(2 + x) + (2 - x)(2 + x).$$

It isn't. To multiply out  $(2 - x)(x + 1)(2 + x)$  first multiple out two of the brackets, say

$$(2 - x)(x + 1)(2 + x) = (2 - x)(2x + x^2 + 2 + x) = (2 - x)(x^2 + 3x + 2)$$

and then multiply through the remaining bracket

$$(2 - x)(x^2 + 3x + 2) = 2x^2 + 6x + 4 - x^3 - 3x^2 - 2x = -x^3 - x^2 + 4x + 4.$$

5 & 6 On these questions a number of students failed to write the answer in the required form  $a^m b^n$ , where  $m, n$  are fractions or integers. Two further common errors, to take for example the expression

$$\left( \frac{b^{2/3}}{ab^{-3/2}} \right)^2,$$

were to treat the  $ab^{-3/2}$  as if it was  $(ab)^{-3/2}$  (i.e.  $ab$  to the power  $-3/2$  instead of  $a$  times  $b^{-3/2}$ ) and to 'simplify'  $(b^{-3/2})^2$  to  $b^{(-3/2)^2}$  (i.e.  $b^{9/4}$ ) rather than the correct  $b^{(-3/2) \times 2} = b^{-3}$ . If you did this make sure it's the very last time!

7. This question was very badly done by most students and even those who set off on the right road frequently stopped short and left the answer in terms of, e.g.  $\ln(u^2)$ ,  $\ln(v^{1/4})$ , instead of in terms of simply  $\ln(u)$  and  $\ln(v)$ . If you were one of them revise the rules L1-8 concerning logarithms, applying those rules is all you need to answer questions on logarithms, it's not like you also need to know some Harry Potter style secret incantations.

Finally, some students wrote answers involving, e.g.  $b^1$ , or the even more babyish,  $+1p$ . When the power or coefficient is 1 we just leave it out, right?!