Feedback on the 2011 1C0/1C1 Exam

Q1 As usual some students lost marks in part 1 because they did not collect terms. Commonly students wrote $1x$ for x. I didn't take marks off for that but would have liked to!

In part 3(ii) students lost a mark for giving the exponent as $2\frac{1}{3}$, I asked for it as a fraction, in this case $\frac{7}{3}$, and writing it in that from contributed to the mark.

In part 3(iii) students lost the mark by giving the exponent as $\frac{4}{6}$, I asked for it in its simplest form i.e. $\frac{2}{3}$.

Q2 In solving these quadratics students tended to rely too much on using the formula, whereupon they made an arithmetic error in working it out. What's more a surprising a number of students mis-remembered the formula as

$$-b \pm \frac{\sqrt{b^2 - 4ac}}{2a}$$

rather than the correct

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

Here and throughout the paper students factorized quadratics incorrectly but never checked their factorization. It's usually a matter of a few seconds to mentally check that when you multiply out your claimed factorization it actually gives you the original quadratic.

In part (5) a number of students did the hard work in getting to $x^2 = 1$ or $x^2 = 2$ but then said 'so $x = 1, \sqrt{2}$', missing out the two other solutions $-1, -\sqrt{2}$.

Q3 Generally students didn't answer this question very well, they didn't seem to have learnt up the properties of log's.

A common problem here, as well as over the rest of the paper in general, was that students didn't finish off their answers and actually say explicitly what x was. For example in part (ii) stopping once they'd reached

$$\frac{4}{x-1} = \frac{1}{5}$$

instead of going on to derive $x = 21$.

Q4 As usual marks were lost here because of pure carelessness. Surprisingly common was to evaluate $6 - 0$ as -6 !

Part (2) of this question was intended to provide the students with a check that their answer to part (1) was probably right since if that point $(-2, 2)$ was not on their line from part (1) then they'd better go back and redo part (1). Surprisingly some students found the point wasn't on their line but then blithely carried on with it regardless!!!

In part (4) many students had trouble working out squares of even quite small numbers. For example 8^2 was commonly evaluated as 16. I expect you to be able to do arithmetic like this without a calculator.

Generally students scored well on this question.

Q5 As with question 4 the part (2) of this question was intended to warn the students to go back and check their point A for part (1) if $\mathcal{C}$ and $\mathcal{E}$ *don't* turn out to have the same slope at this point. Again some student carried on regardless despite receiving the warning that they'd already made a mistake.

In part (4) when solving for the points of intersection you should have got to $x(x-2)=0$. At this stage a number of students concluded that $x=2$ – and arrived back at the point A ! What they missed was that $x(x-2)=0$ also has the solution $x=0$ (obviously $x(x-2)=(x-0)(x-2)$) which correctly gave the other point of intersection.

Q6 Few students attempted this question despite the fact that it was really quite straightforward. Most of those who did gave me the impression that they really didn't have the faintest idea what they were doing and had only chosen this question because they were in a similar situation with respect to most of the other questions!

Q7 In the last part a number of students parroted the words from the similar example in the the notes that 'the line $y=-15$ lies below the value of the curve $y=2x^3-3x^2-12x+20$ at the local minimum $x=2$ and hence only intersects this curve at one point'. However they failed to work out what the value of y on this curve was when $x=2$ (0 in fact) and so this claim was unjustified.

Q8 This was a straightforward question and those students who knew what they were doing breezed through it with high marks. Inexplicably there were on the other hand a number of students who had no idea about differentiation but still attempted it – with the expected outcome.

One common shortcoming here was to leave the answer to part (3) as

$$\frac{x+2-(x+1)}{(x+2)^2}$$

(frequently the brackets in the numerator were omitted in fact). A mark was lost for this on the grounds that simplifying it, to

$$\frac{1}{(x+2)^2},$$

was an essential part of the solution.

As a final comment on the paper as a whole, despite the clear statement in the course notes that only the first 6 questions answered would be marked, some students gave solutions to more than 6 questions. By doing this they gained nothing, they would have been better to have deleted the extra solutions to leave just their (supposedly) best 6.