Math152 at the University of Tennessee, Knoxville - Chat for January 26, 2016 with the course instructor, Louis Gross.

I will be online starting at 7:30PM and will be happy to answer questions regarding any aspect of the course, assignments, etc. though for this evening I suspect that questions will be mostly about Chapters 15-16. You can type in this document to ask questions.

When you ask a question, please do not use your name because this document will be saved and publicly posted after we close it. I will be on-line at least until 8:30PM but will stay on longer if there are still questions. Note that I do not know the identity of anyone posting questions - each participant shows up as “Anonymous” animal.

I am online now - Lou

Hey, would you mind showing how to work out 15.1 in the homework assignments, parts F & M. For part F, I am getting (-1)/(sqrt(2) + sqrt(2)) and for part M, I am getting (1)/(sqrt(3) + sqrt(3)). I will not be online while you are on because I have work, but your explanation would be greatly appreciated. Thanks

For 15.1 (f) we are asked to find $\lim_{t \to 0} \frac{\sqrt{2-t}-\sqrt{2}}{t}$ and to find this we realize that if you just plug in t=0 you get something that is in the indeterminant form 0/0 so to find the answer we can either plug in numbers for t that get closer and closer to 0 or we can multiply top and bottom by a form that allows us to change the fraction - in this case we multiply top and bottom by
$\sqrt{2-t}+\sqrt{2}$

which means that the top will be just $|2-t|-2$ and the bottom will be $t(\sqrt{2-t}+\sqrt{2})$. So now we have two cases to consider since the top has an absolute value:
Case 1 - let t get close to 0 from above in which case the |2-t| = 2-t so we get just -t on the top and the limit becomes

$$\lim_{t \to 0^+} \frac{-t}{t(\sqrt{2-t}+\sqrt{2}} = \lim_{t \to 0^+} \frac{-1}{(\sqrt{2-t}+\sqrt{2}}$$

and in this we can plug in t=0 to get $\frac{-1}{2\sqrt{(2)}}$ as the answer. If you look at the second case of letting t get closer and closer to zero from below, you can do exactly the same as above and also get the same answer - so the limit exists and is $\frac{-1}{2\sqrt{(2)}}$
OK?

Now for problem 15.1 (m) the process is very similar only in this case we multiply top and bottom by $\sqrt{3+t}+\sqrt{3}$ which gives us in the numerator $3+t-3=t$
and in the denominator we get
$t(\sqrt{3+t}+\sqrt{3})$

so the t on top and bottom cancel and we get after plugging in t=0 $\frac{1}{2\sqrt{(3)}}$

So the two answers you got are correct

I am going off line - have a good night. Lou