

Calculus Test 3
Test 3, Number 2b

Email Question was :

I am in need of some help with the grading of the Calculus 1 Test 3 problem 2 b .

My son came up with the following 2 answers:

$$+/- 2x/[3(x^2-9)^{(1/2)}]$$

$$+/- 4x/[9(4/9 x^2-4)^{(1/2)}]$$

Could you please tell me if each of these is correct or incorrect? Also, the negative wasn't included in your answer and we were wondering why.

Our Reply:

On Test 3 2b it appears it is correct. (I think the typing in email is making it not clear)

The answer in the manual is left in a form that is NOT simplified – but SHOULD have +/- after it comes out of the square root symbol.

Looks like he tried to simplify some. Here is how I see it.

We had $y = +/- [(4x^2 - 36)^{1/2}] / 3$ --- this in the solutions I have just added the +/-

Then if you realize that you can factor out a 4 from 4 and 36 you get

$$y = +/- [4 (x^2 - 9)^{1/2}] / 3$$

And when you take the 4 out of the square root to get 2 you get

$$y = +/- 2/3 * [(x^2 - 9)^{1/2}]$$

This looks kinda like what you wrote – not sure. I would have him check it to make sure his algebra is correct. You have the 3 embedded in the brackets – but I think you meant what I have above. If so – correct.

The second one is not so clear. Doing the same thing, you SHOULD get

$$+/- 4x/3 * 1 / [(4x^2 - 36)^{(1/2)}]$$

When simplified becomes

$\pm \frac{2x}{3} \cdot \frac{1}{[(x^2 - 9)^{1/2}]}$ --- after you pull out a four from the bottom and then take the square root to get 2 - and 4/2 leaves 2 in the numerator.

So I am thinking from what you have written on this one that he must have it wrong. Again – algebra mistakes more than anything.

If you can check his work he should have a step that looks similar to ours before he simplifies the result to get his final step. BUT – if you have typed them correctly as you meant – his math is wrong – but I am thinking a calc error is the issue.