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| Test 2Dusty Wilson Math 153 No work = no credit  No Symbolic Calculators | | **Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *Notable enough, however, are the controversies over the series 1 - 1 + 1 - 1 + 1 - ... whose sum was given by Leibniz as 1/2, although others disagree. ... Understanding of this question is to be sought in the word "sum"; this idea, if thus conceived -- namely, the sum of a series is said to be that quantity to which it is brought closer as more terms of the series are taken -- has relevance only for convergent series, and we should in general give up the idea of sum for divergent series.*  Leonard Euler (1707 - 1783)  Swiss mathematician | |
| Warm-ups (1 pt each): | =\_\_\_\_\_ | =\_\_\_\_\_ | =\_\_\_\_\_ |

(1 pt) According to Euler, for what type of infinite series is it relevant to calculate the sum? Answer using complete English sentences.

(10 pts) Does converge or diverge? Justify your answer.

(10 pts) Does diverge? If not, is it conditionally or absolutely convergent? Justify your answer.

(10 pts) Does converge or diverge? If it converges, is it conditional or absolute convergence? Justify your answer.

(10 pts) Determine whether the sequence  converges or diverges. If it converges, find the limit.

(10 pts) Write  in the form  without finding  for the position vector-valued function  at . That is, you need to find .

(10 pts) Find the kissing circle of  when  given that at this *t* value:

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(10 pts) Verify that the arclength of  on is  . Hint: You must use the product rule.

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| Test IIDusty Wilson Math 153 No work = no credit  No Symbolic Calculators | | **Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *Notable enough, however, are the controversies over the series 1 - 1 + 1 - 1 + 1 - ... whose sum was given by Leibniz as 1/2, although others disagree. ... Understanding of this question is to be sought in the word "sum"; this idea, if thus conceived -- namely, the sum of a series is said to be that quantity to which it is brought closer as more terms of the series are taken -- has relevance only for convergent series, and we should in general give up the idea of sum for divergent series.*  Leonard Euler (1707 - 1783)  Swiss mathematician | |
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