Tue Jan 12, 2016

SCORE: /30 POINTS

- NO CALCULATORS OR NOTES ALLOWED
- SHOW PROPER CALCULUS-LEVEL WORK
- **SIMPLIFY ALL ANSWERS**

For this question, you may use the formulae for $\frac{d}{dx} \sinh x$, $\frac{d}{dx} \cosh x$ and/or $\frac{d}{dx} \tanh x$ without proving them. SCORE: _____/8 PTS

If you need to use the formula for the derivative of any other hyperbolic function, you must prove it.

[a]

Without using the exponential formula for sech x, prove the formula for
$$\frac{d}{dx}$$
 sech x.

$$\frac{d}{dx} \text{ sech} x = \frac{d}{dx} \left(\frac{1}{\cosh x} \right) = \frac{\cosh x}{\cosh x} \frac{d(1)}{dx} - 1 \times \frac{d(1)}{dx} \frac{dx}{dx} \times \frac{1}{dx} = \frac{0 - \sinh x}{\cosh x} - \frac{\sinh x}{\cosh x} = \frac{1}{\cosh x} \frac{1}{\cosh x} = \frac{1}{\cosh x} \frac{\sinh x}{\cosh x} = \frac{1}{\cosh x} \frac{1}{\cosh x} = \frac{1}{\cosh x} = \frac{1}{\cosh x} = \frac{1}{\cosh x} \frac{1}{\cosh x} = \frac{$$

Without using the logarithmic formula for $\tanh^{-1} x$, prove the formula for $\frac{d}{dx} \tanh^{-1} x$. [b]

At tanh
$$x$$
 let $y = \tanh^2 x$, prove the formula for $\frac{dx}{dx}$ tanh y .

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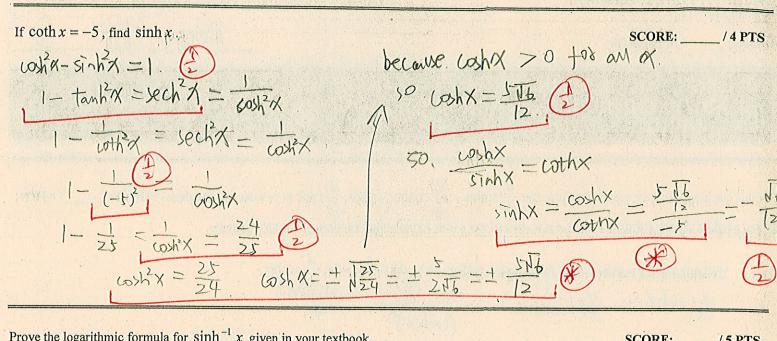
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Find lim coth x algebraically.

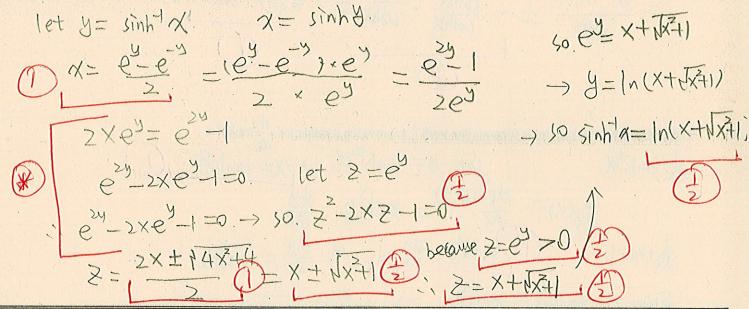
Find
$$\limsup_{x\to\infty} \coth x$$
 algebraically.

Tim both $x = \lim_{x\to\infty} \frac{e^x + e^x}{e^x - e^x} = \lim_{x\to\infty} \frac{e^x + e^x}{e^x$



Prove the logarithmic formula for $\sinh^{-1} x$ given in your textbook.

SCORE: ____/5 PTS



Find $\frac{d}{dx}x^2 \cosh^{-1}(x^5)$. Simplify your final answer as a single fraction.

SCORE: 4 /4 PTS

You may use the derivatives of any hyperbolic or inverse hyperbolic functions from your textbook without proving them.

$$\frac{d}{dx} \frac{\chi^{2}(\omega)h^{2}(\chi^{2})}{dx} = \frac{(\omega)h^{2}(\chi^{2})}{dx} \times \frac{d(\chi^{2})}{dx} + \frac{\chi^{2}}{dx} \frac{d((\omega)h^{2}(\chi^{2}))}{dx}$$

$$= \frac{(\omega)h^{2}(\chi^{2})}{(\chi^{2})} \times \frac{1}{2} \times$$

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[MUL7	TIPLE CHOICE] Write the letter of the correct answers in the spaces below.
ANSW	ERS: 11 + 2 C 3 b 4 6 6
	If you score 110 points on Midterm 1, 130 points on Midterm 2 and 135 points on Midterm 3, which midterm score(s) will be changed, and to what value? (HINT: You are encouraged to start studying regularly early in the quarter.)
[a] [b] [c] [d] [e]	Midterm 1's score will be changed to 135 (the highest midterm score) Midterm 1's score will be changed to $(110 + 130 + 135) \div 3 = 125$ (the average of all midterm scores) Midterm 1's score will be changed to $(110 + 130) \div 2 = 120$ (the average of Midterm 1's and Midterm 2's scores) Midterm 1's score will be changed to $(110 + 135) \div 2 = 122.5$ (the average of Midterm 1's and the highest midterm's scores) Midterm 1's score will be changed to $(110 + 135) \div 2 = 122.5$ and Midterm 2's score will be changed to $(130 + 135) \div 2 = 132.5$ (the average of each midterm's and the highest midterm's score) no midterm scores will be changed
2	If you score 145 points on Midterm 1, 125 points on Midterm 2 and 150 points on Midterm 3, which midterm score(s) will be changed, and to what value?
[a] [b] [c]/ [d] [e]	Midterm 2's score will be changed to 150 (the highest midterm score) Midterm 2's score will be changed to $(125 + 145 + 150) \div 3 = 140$ (the average of all midterm scores) Midterm 2's score will be changed to $(125 + 145) \div 2 = 135$ (the average of Midterm 2's and Midterm 1's scores) Midterm 2's score will be changed to $(125 + 150) \div 2 = 137.5$ (the average of Midterm 2's and the highest midterm's scores) Midterm 1's score will be changed to $(145 + 150) \div 2 = 147.5$ and Midterm 2's score will be changed to $(125 + 150) \div 2 = 137.5$ (the average of each midterm's and the highest midterm's score) no midterm scores will be changed
3	Which statement below regarding attendance is false ?
[a] [b] [c] [d]	Whenever you come into class (whether on time or late), you should sign in on the attendance spreadsheet right away. Arriving late on a quiz or midterm day will not be counted as late. Unexcused early departures are considered absences. If you have perfect attendance and classroom behavior for the first 7 weeks, and do not show up again after that, you will receive an F for the course. Attendance policies will not apply to you if you score more than 80% on every midterm.
4	How much of your learning does the instructor believe comes from your daily reading and homework?
a] b] c] d]/	reading = 10%, homework = 30% \Rightarrow combined = 40% reading = 15%, homework = 35% \Rightarrow combined = 50% reading = 15%, homework = 45% \Rightarrow combined = 60% reading = 20%, homework = 50% \Rightarrow combined = 70% reading = 25%, homework = 55% \Rightarrow combined = 80%
5	Proper use of the textbook for this class includes
b] c] d]⁄	understanding all the terminology used in the book working out the given examples yourself and checking that you are able to get the same results as the book reading the sections of the textbook before the corresponding lecture all of the previous answers [a], [b] and [c] some, but not all, of the previous answers [a], [b] and [c]

If you continue writing on your test after the stated ending time, you will receive a 0 for that test.

Which statement below regarding tests (quizzes, midterms, final exam) is false?

[b] There are no make-ups for missed quizzes.

[6]

The instructor expects you to be able to identify and execute solutions on midterms more quickly than on quizzes because you should have had much more practice.

If your tablet, phone, computer etc. makes an audible noise during a test, you will lose 10% of all points available on that test.

If you cannot make the scheduled final exam time for any reason, your final exam can be rescheduled.