

Homework 10 (Chap. 4.4), 68.00/110.00 (61.82%)

November 23, 2019

Problem 1d score: 10/10

OK, but please write **clearly** whether this is indeterminate form or not.

Problem 2c score: 10/10

OK, but please write **clearly** whether this is indeterminate form or not.

Problem 3b score: 10/10

ok

Problem 4a score: 10/10

ok

Problem 9 score: 10/10

OK

Problem 14 score: 0/10¹

NOT ok

$$(\tan 3x)' \neq \frac{1}{\cos^2 3x}, \quad (\sin 2x)' \neq \cos 2x.$$

Problem 25 score: 0/10²

$$(\sqrt{1+2x} - \sqrt{1-4x})' \neq \frac{1}{2\sqrt{1+2x}} - \frac{1}{2\sqrt{1-4x}}$$

Problem 37 score: 10/10

ok

¹similar problems: 15,16

²similar problems: 26,27

Problem 48 score: 0/10³

NOT ok

$$\lim_{x \rightarrow \infty} x^{3/2} \sin\left(\frac{1}{x}\right) \neq \lim_{x \rightarrow \infty} \frac{x^{3/2}}{\sin \frac{1}{x}} \left(= \lim_{x \rightarrow \infty} \frac{x^{3/2}}{\left(\sin \frac{1}{x}\right)^{-1}} \right) < ++ >$$

i++i

Problem 51 score: 0/10⁴

NOT ok

$$\lim_{x \rightarrow 1} \frac{(\ln x)'}{\left(\ln x + 1 - \frac{1}{x}\right)} \neq \lim_{x \rightarrow 1} \frac{\frac{1}{x}}{\frac{1}{x} - \frac{1}{x^2}} \left(\lim_{x \rightarrow 1} \frac{\frac{1}{x}}{\frac{1}{x} + \frac{1}{x^2}} \right)$$

Problem 59 score: 10/10

ok

Problem 63 score: 10/10

ok

1. Where did you check that denominator is differentiable around 0?
2. Where did you check that numerator is differentiable around 0?
3. Where did you check that denominator's derivative is nonzero near 0?

Problem 67 score: 10/10

ok

1. Where did you check that denominator is differentiable around 0?
2. Where did you check that numerator is differentiable around 0?
3. Where did you check that denominator's derivative is nonzero near 0?

Problem 84 score: 10/10

1. Where did you check that denominator's derivative is nonzero near $\theta = 0$?

³similar problems: 49,50

⁴similar problems: 52,53

Problem 87 score: 8/10⁵

1. Where did you check that denominator is differentiable around 0?
2. Where did you check that numerator is differentiable around 0?
3. Where did you check that denominator's derivative is nonzero near 0?

⁵similar problems: compute $\lim_{x \rightarrow 0} \frac{f(3-3x)-f(3+4x)+f(3-7x^2)}{x}$ with f' continuous, $f(3) = 0, f'(3) = -5$; compute $\lim_{x \rightarrow 0} \frac{-f(-3+5x)+f(-3+x)+f(-3)}{x}$ with f' continuous, $f(-3) = 0, f'(-3) = -3$