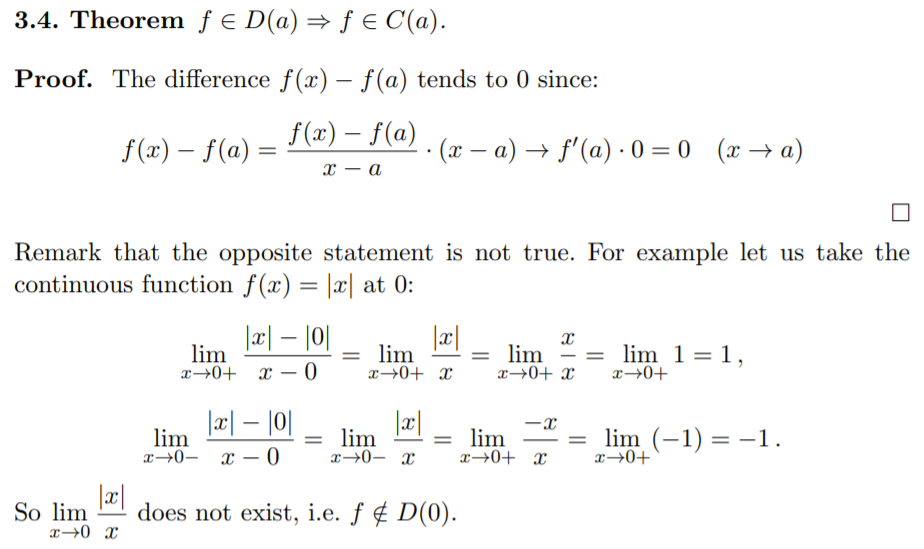
**Advanced level**

**1. The theorem about the connection between the differentiability and the continuity**

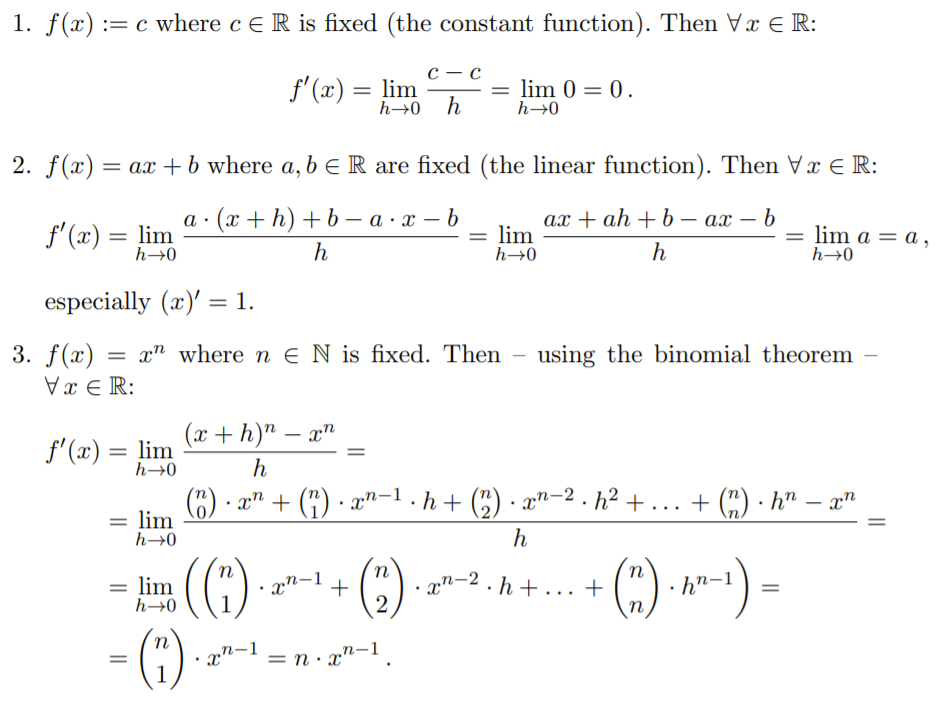
**Answer:** Analysis\_2\_Csorgo.pdf 3.4 theorem, page 17

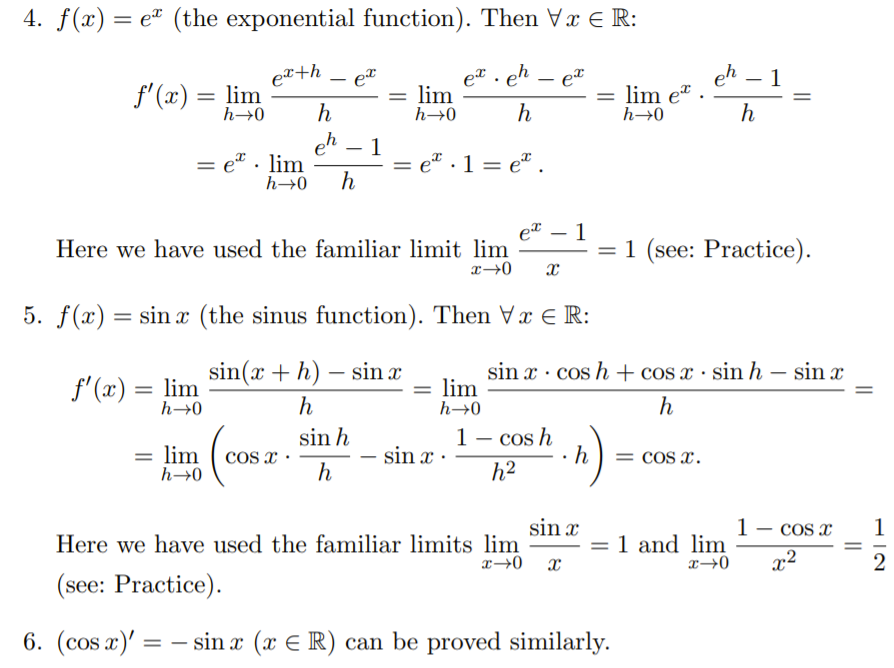


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**2. The derivatives of the following functions: c, ax + b, x^n , e^x , sin x**

**Answer:** Analysis\_2\_Csorgo.pdf 3.2 paragraph, page 17-18

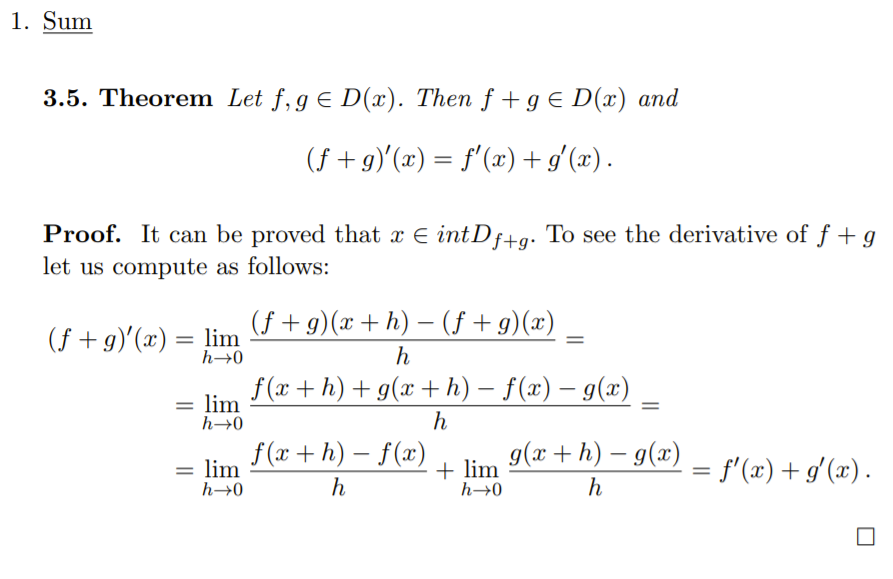




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**3. The derivative of the sum**

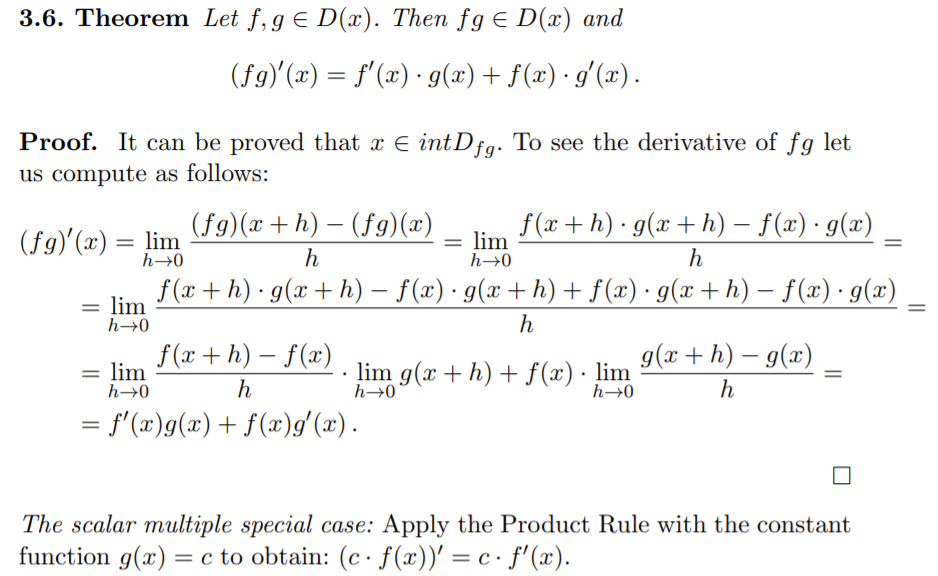
**Answer:** Analysis\_2\_Csorgo.pdf 3.5 theorem, page 18



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**4. The derivative of the product**

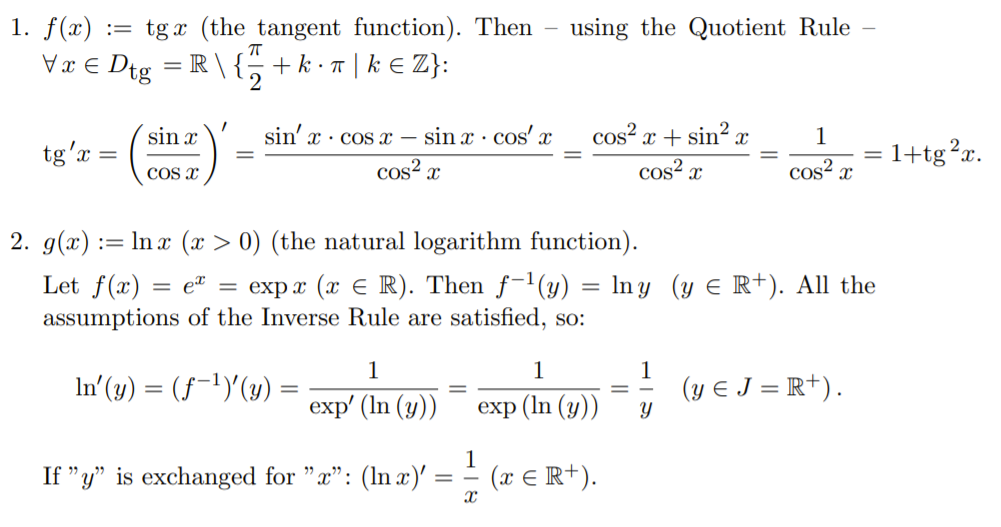
**Answer:** Analysis\_2\_Csorgo.pdf 3.6 theorem, page 19



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**5. The derivatives of tan x, ln x, a^x**

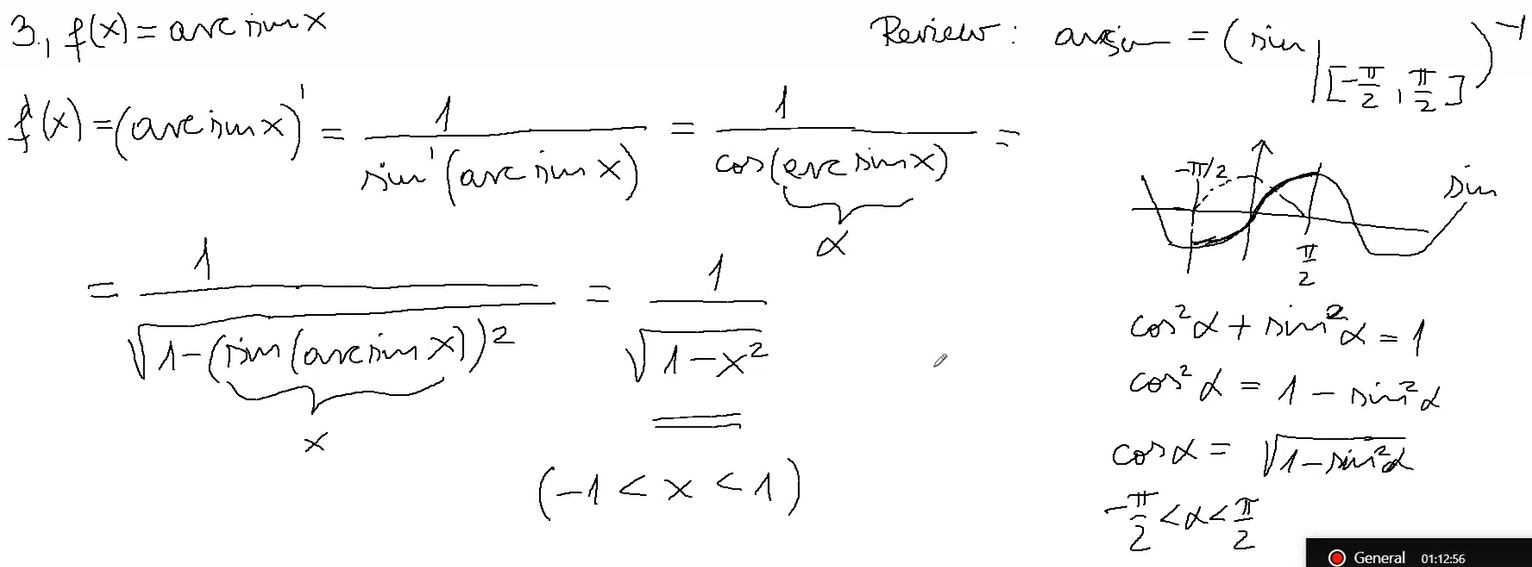
**Answer:** Analysis\_2\_Csorgo.pdf 3.4 pararaph, page 20

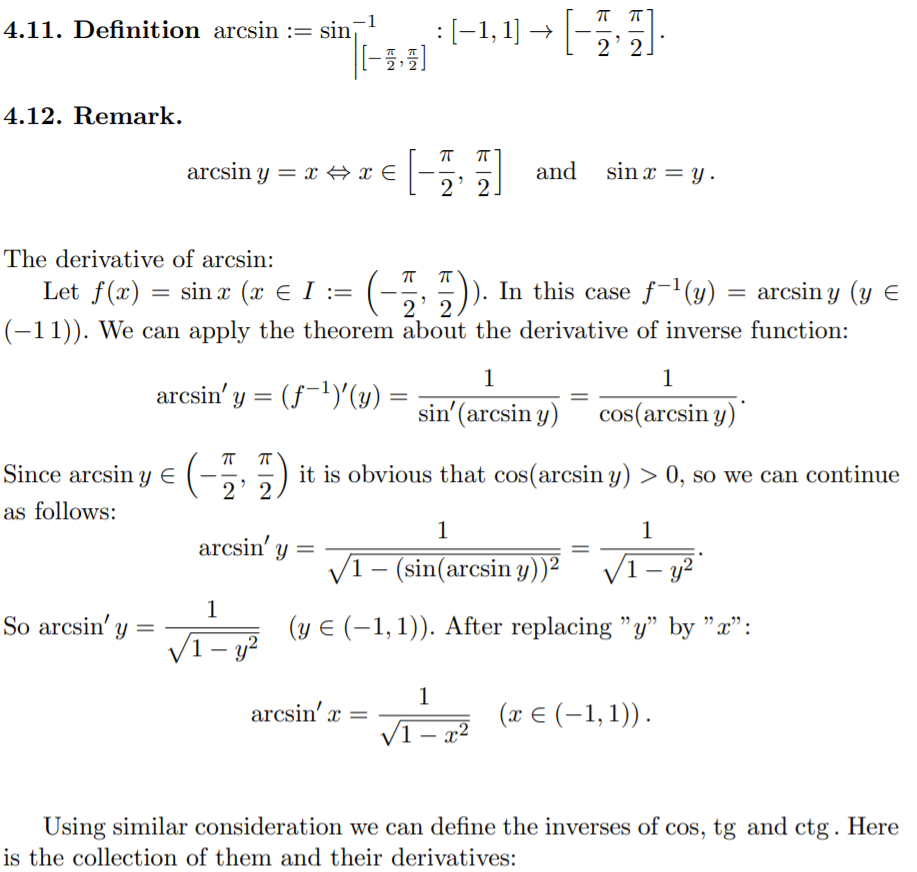


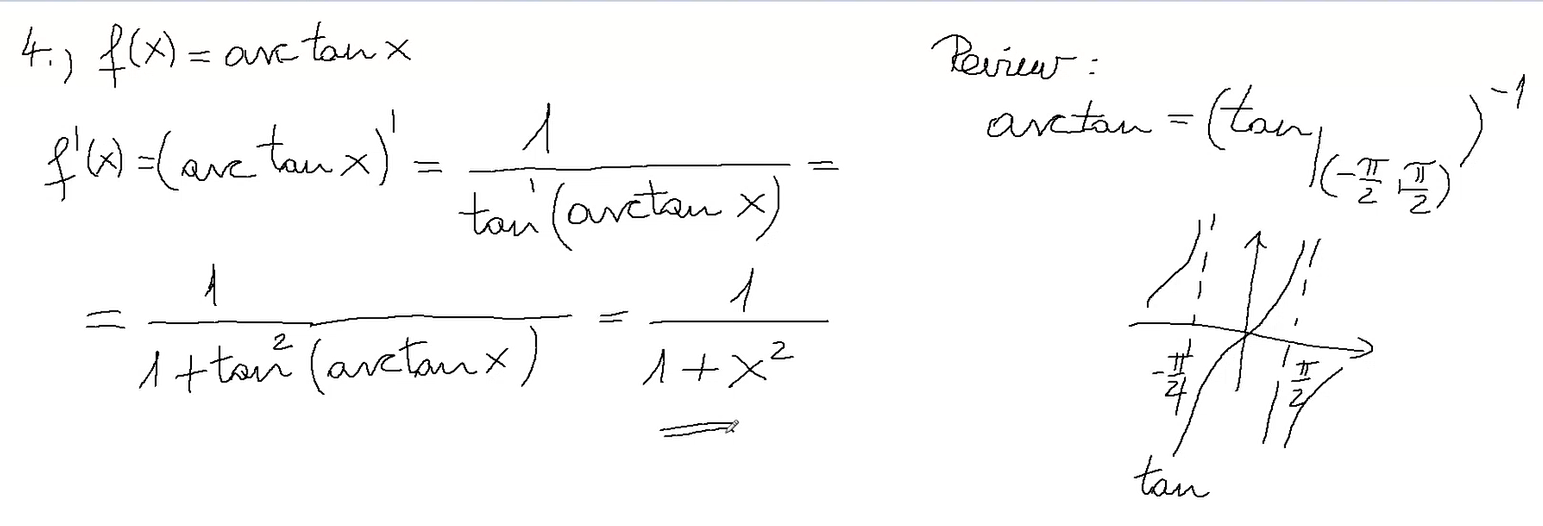
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**6. The derivative of arcsin and of arctan**

**Answer:** Analysis\_2\_Csorgo.pdf 4.11 definition, page 26



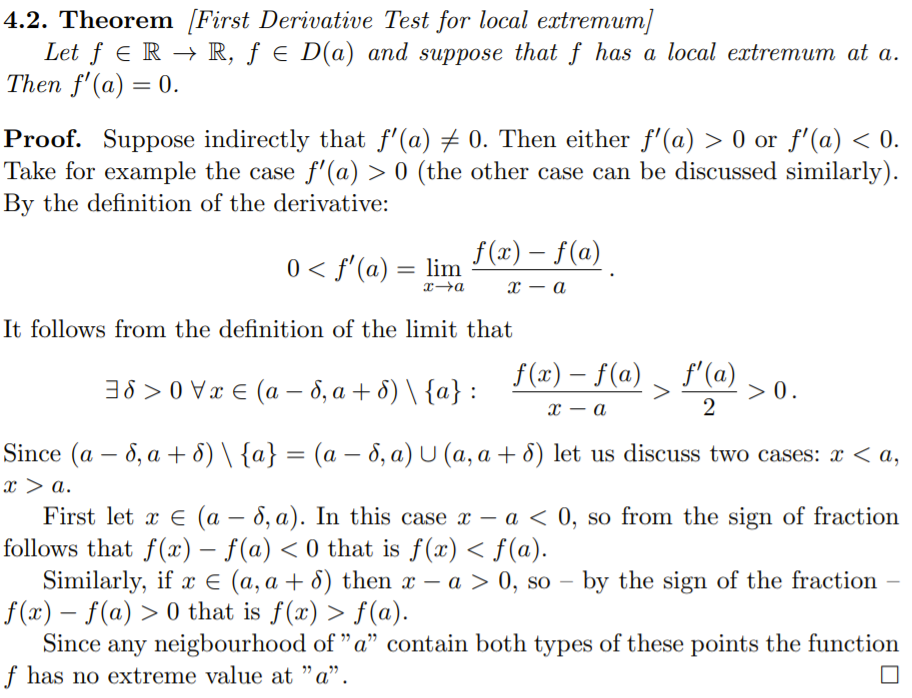




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**7. The First Derivative Test (First Order Necessary Condition) for local extremum**

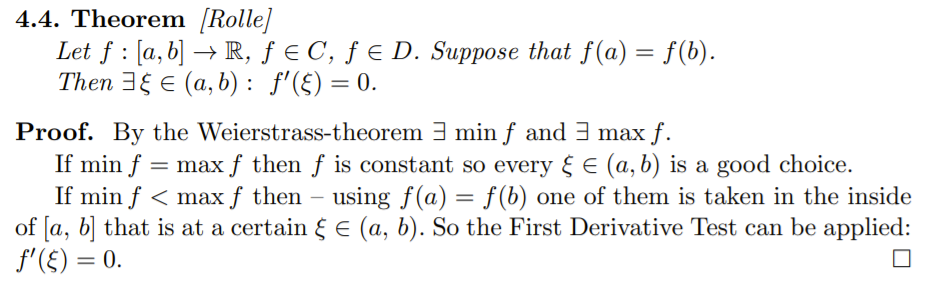
**Answer:** Analysis\_2\_Csorgo.pdf 4.2 theorem, page 22



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**8. Rolle’s Mean Value Theorem**

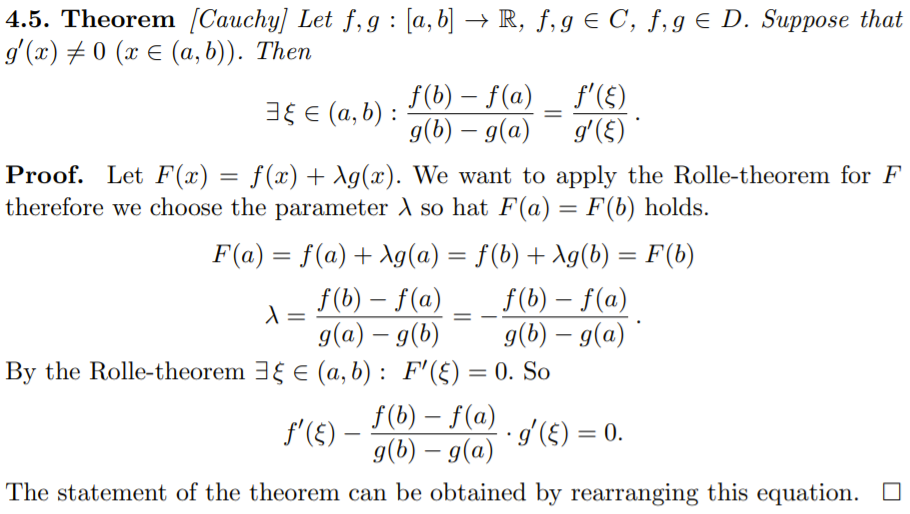
**Answer:** Analysis\_2\_Csorgo.pdf 4.4 theorem, page 23



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**9. Cauchy’s Mean Value Theorem**

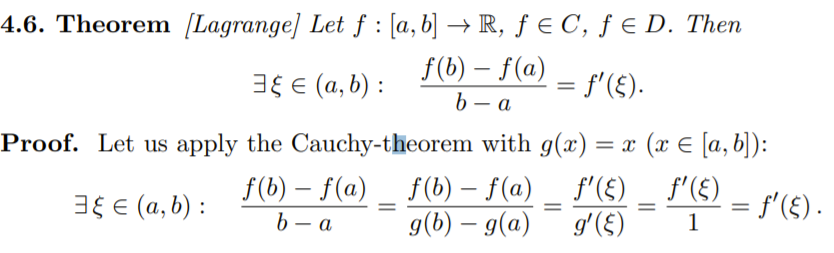
**Answer:** Analysis\_2\_Csorgo.pdf 4.5 theorem, page 23



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**10. Lagrange’s Mean Value Theorem**

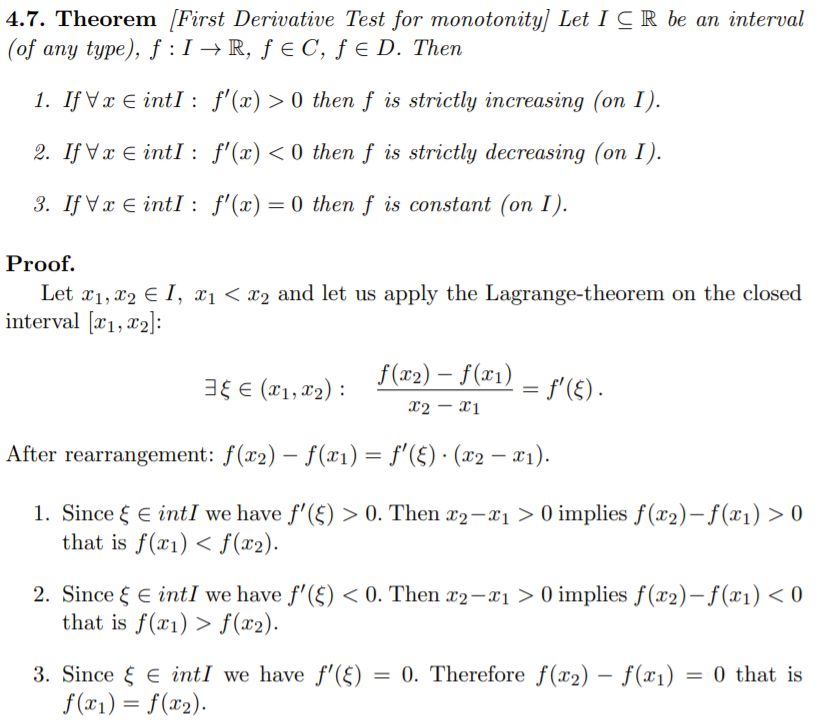
**Answer:** Analysis\_2\_Csorgo.pdf 4.6 theorem, page 23



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**11. The First Derivative Test for monotonicity**

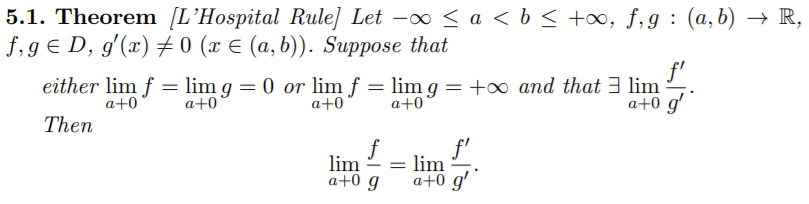
**Answer:** Analysis\_2\_Csorgo.pdf 4.7 theorem, page 24



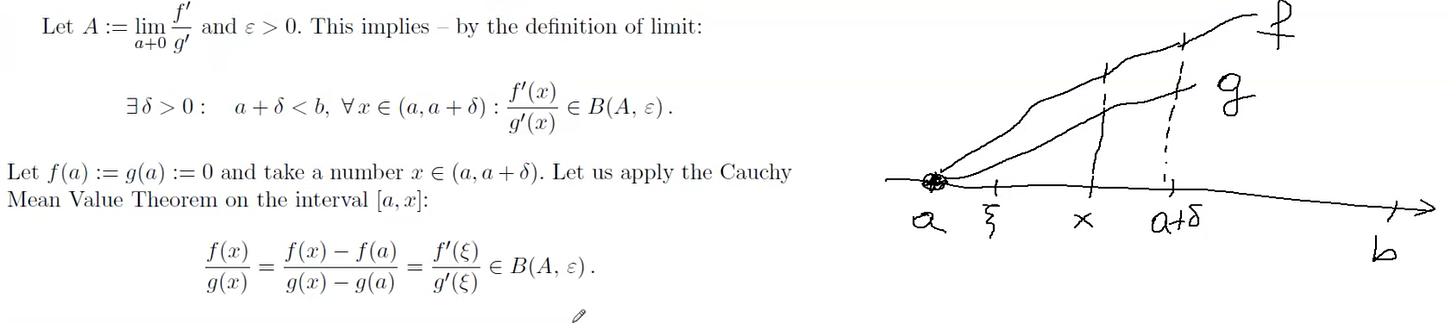
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**12. L’Hospital’s Rule (the case that was proved on the lecture)**

**Answer:** Analysis\_2\_Csorgo.pdf 5.1 theorem, page 28







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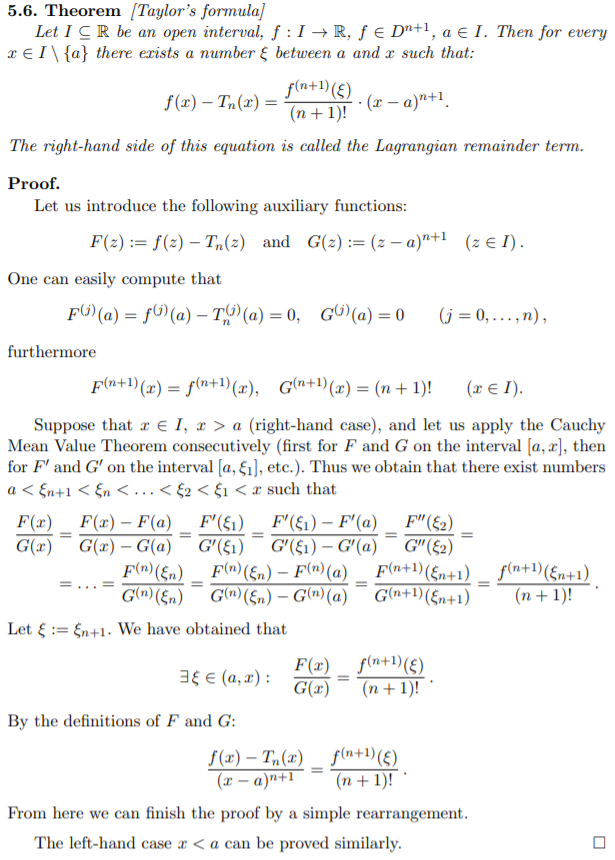
**13. The connection between the derivatives of a function and of its Taylor-polynomials. Prove it for the 0-th and for the 1-st derivatives.**

**Answer:** Analysis\_2\_Csorgo.pdf 3.4 theorem, page 17

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**14. The theorem about the Taylor-formula**

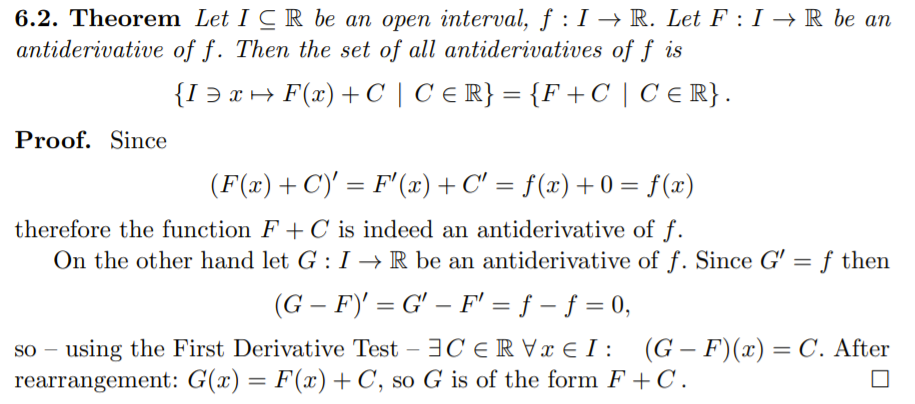
**Answer:** Analysis\_2\_Csorgo.pdf 5.6 theorem, page 30



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**15. The theorem about the set of all antiderivatives of a function**

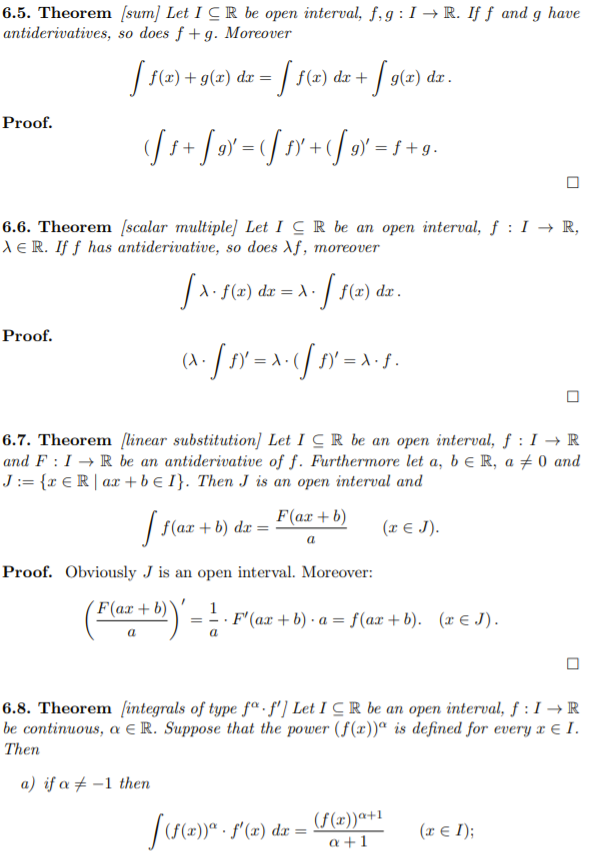
**Answer:** Analysis\_2\_Csorgo.pdf 6.2 theorem, page 33

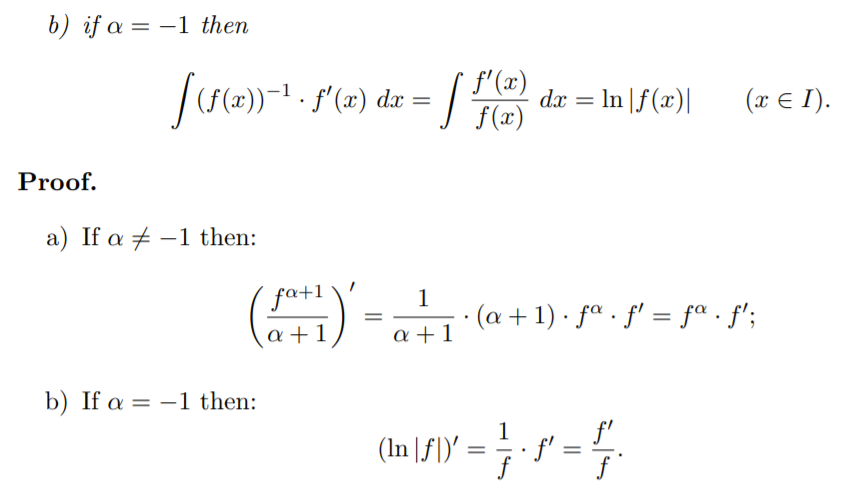


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**16. The 5 simple integration rules**

**Answer:** Analysis\_2\_Csorgo.pdf 6.5-6.8 theorem, page 34-35

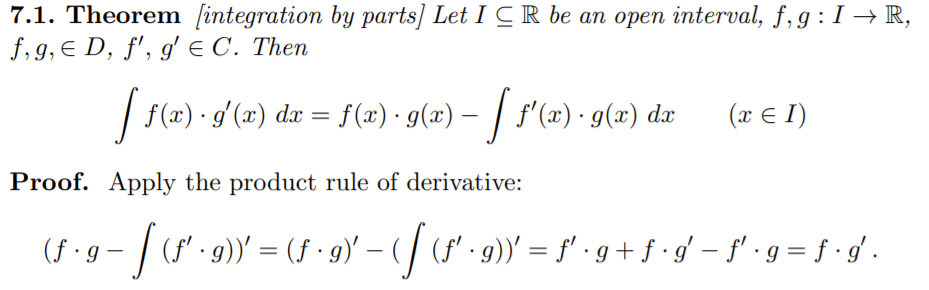




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**17. The rule of Integration by Parts for antiderivatives**

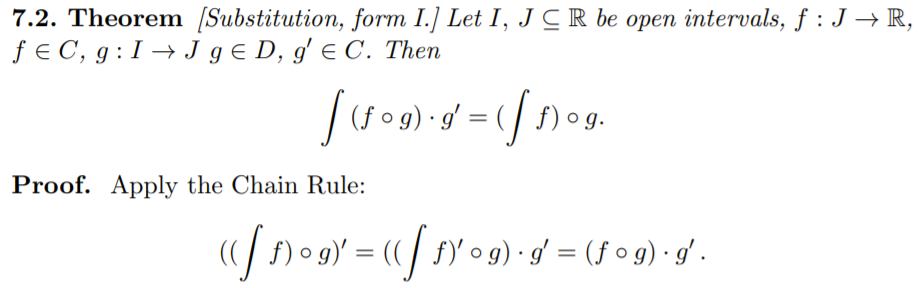
**Answer:** Analysis\_2\_Csorgo.pdf 7.1 theorem, page 38



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**18. The rule of Substitution Form I. for antiderivatives**

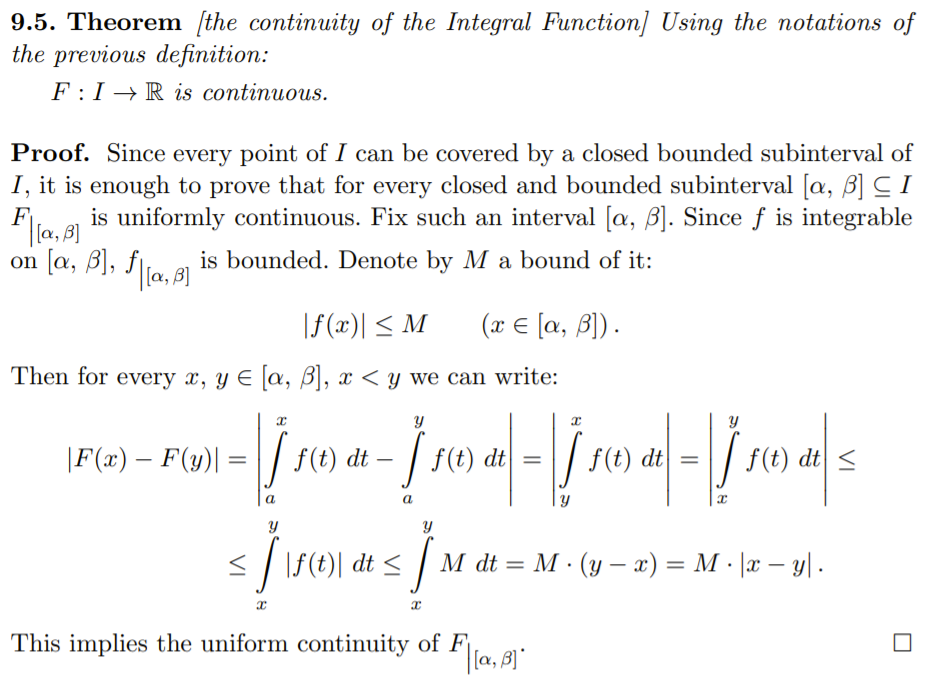
**Answer:** Analysis\_2\_Csorgo.pdf 7.2 theorem, page 38



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**19. The theorem about the continuity of the Integral Function**

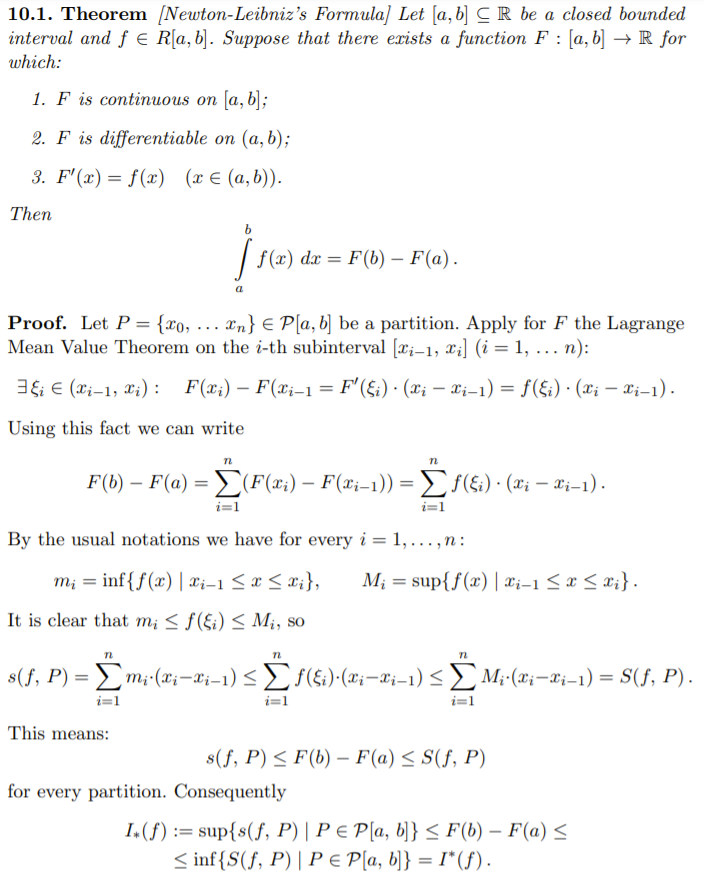
**Answer:** Analysis\_2\_Csorgo.pdf 9.5 theorem, page 49

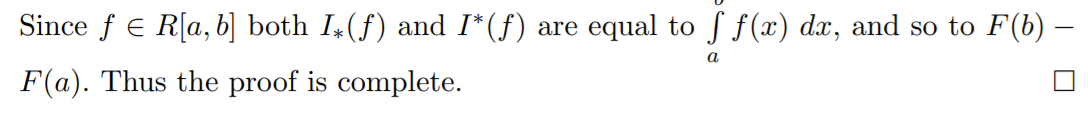


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**20. The Fundamental Theorem of Calculus (the Newton-Leibniz Formula)**

**Answer:** Analysis\_2\_Csorgo.pdf 10.1 theorem, page 51-52

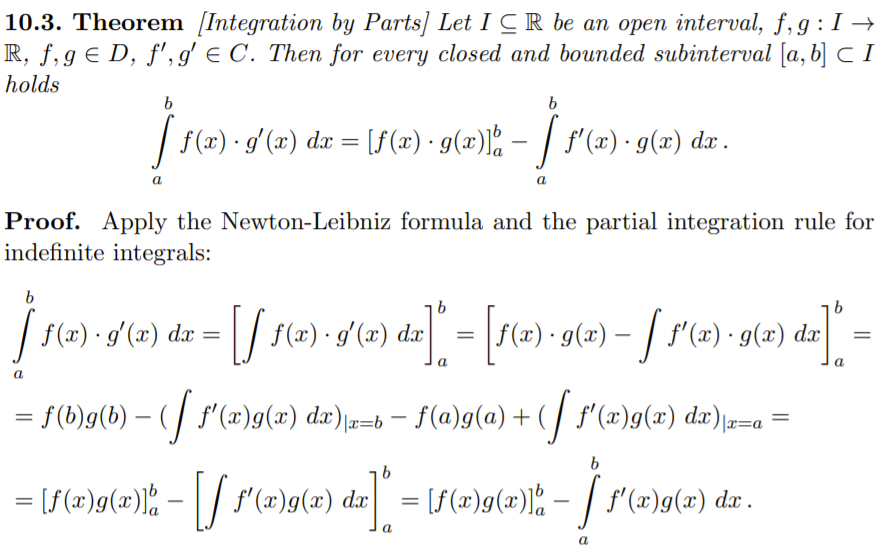




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**21. The rule of Integration by Parts for definite integrals**

**Answer:** Analysis\_2\_Csorgo.pdf 10.3 theorem, page 52



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**22. The First Derivative Test (First Order Necessary Condition) of local extremum for functions of type R^n → R**

**Answer:** Analysis\_3\_Csorgo.pdf 8.2 theorem, page 41

