# Eserciziario di Analisi Matematica

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## 1 Derivate

1.

# 2 Integrali

1. 2.

$$\int \frac{1}{x \cdot \ln(x) \cdot (\ln(\ln(x))))^2} \, dx = -\frac{1}{\ln(\ln(x))} + c \qquad \qquad \int \frac{x+2}{\sqrt{1-x^2}} \, dx = 2\arcsin(x) - \sqrt{1-x^2} + c$$

#### Limiti

2.

4.

1. 
$$\lim \frac{x^4 - x^3 + 1}{\sqrt{1 + x^2 + x^2}} = -c$$

$$\lim_{x \to +\infty} \frac{x^4 - x^3 + 1}{\sqrt{x} + x^2 - x^3} = -\infty$$

$$\lim_{x \to +\infty} \frac{x^4 - x^3 + 1}{\sqrt{x} + x^2 - x^3} = -\infty$$

$$\lim_{x \to +\infty} \frac{x^2 - 2}{x^2 - 2x + 1} = 0$$

$$\lim_{x \to +\infty} \frac{x^3 - x^2 + 4x}{x^5 - x} = -4$$

$$\lim_{x \to +\infty} \frac{x + \sqrt{x^2 + 8}}{2x + 1} = 1$$

3. 
$$\lim_{x \to 1^+} \frac{x^4 - x^3 + 1}{1 - x^3} = \infty$$

$$\lim_{x \to 1^{+}} \frac{x - x + 1}{1 - x^{3}} = \infty \qquad 10.$$

$$\lim_{x \to \infty} \frac{x - x + 1}{1 - x^{3}} = \infty$$

$$\lim_{x \to \infty} \frac{\sqrt[3]{3x^{3} - 2x^{2} + 5}}{2x + \sqrt{x^{2} - 1}} = \sqrt[3]{3}$$

$$\lim_{x \to \infty} \frac{x \cdot \sin^{2}(8x)}{(1 - \cos(x))\ln(1 + \tan(x))} = 128$$
11.

8.

5. 
$$\lim_{x \to 0} (1 - \cos(x)) \ln(1 + \tan(x)) = 120$$

$$\lim_{x \to 1} \frac{x^3 - 3x + 2}{x^2 - 6x + 5} = 0$$

$$\lim_{x \to 1} \frac{2 + \cos(x)}{2x + \sin(x)} = 0$$

6. 
$$\lim_{x \to 2} \frac{3 - \sqrt{5x - 1}}{4 - x^2} = \frac{5}{24}$$
 
$$\lim_{x \to +\infty} \frac{2^x + (\frac{27}{10})^x}{x + e^x} = 0$$

7. 
$$\lim_{x \to +\infty} \frac{x^2 - 3x^4}{2x^2 - x + 4x^4} = -\frac{3}{4}$$
 
$$\lim_{x \to +\infty} e^x - x^x = -\infty (x = e^{\ln(x)})$$

4	Equazioni	different	zial	li
-		differ cit	_ia	

1.