**I.I.S. Galilei- Artiglio Compito di matematica Anno scolastico**

**Nome ….....Cognome.....Data.....**

A) INTEGRALI (0,50 x10)

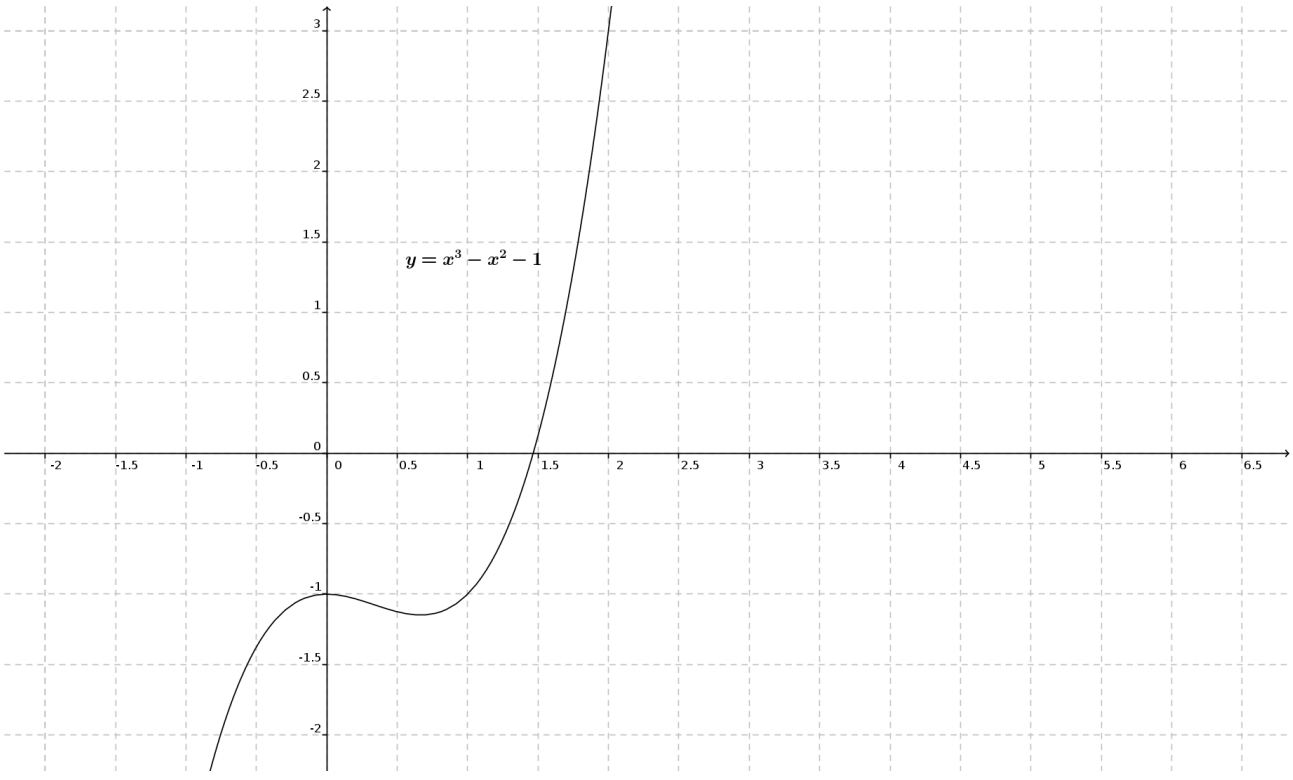
1. $\int x^2 \cdot (x^3+1)^6 \, dx$
2. $\int \frac{1}{(2x-3)^5} \, dx$
3. $\int x \sqrt[4]{x-2} \, dx$
4. $\int \frac{1}{\sqrt{16-x^2}} \, dx$
5. $\int \frac{(2-tanx)^2}{\cos^2 x} \, dx$
6. $\int arcsenx \, dx$
7. $\int (x-6)(\sqrt[5]{x}-1) \, dx$
8. $\int \frac{x^2+5}{x^2+1} \, dx$
9. $\int \frac{1}{x^2+9} \, dx$
10. $\int x 2^x \, dx$

**FAI LA VERIFICA DI 3 PRIMITIVE TROVATE NEGLI ESERCIZI SOPRA (0,3)**

B) Using L'Hospital's Rule, evaluate the following limits: (1,2)

1) $\lim_{x \to 0^+} \frac{senx - \ln(cosx)}{x^2}$
2) $\lim_{x \to +\infty} (x^2 - 8x)^{\frac{1}{x}}$
2) $\lim_{x \to 0^+} \left( \frac{1}{x} - \frac{1}{\ln(x+1)} \right)$

C) Proof that the equation $x^3 - x^2 - 1 = 0$ has got a solution between 1 and 2. Can you proof that this solution is unique ? Use Newton's method with $x_0 = 2$ to approximate the solution. (find at least $x_1$ and $x_2$ ) . Draw in this graph the Newton's method. (1,20).



E) Data la funzione $f(x)=x\ln x$ , trova la sua primitiva che passa per il punto $(2,0)$ .
Dimostra poi che tutte le primitive hanno un punto di minimo per x=1.