INTEGRALI

Lo
$$y = \sqrt{a^2 - n^2}$$
 semi circonferenta

 $\sqrt{\partial^2 - n^2} dn =$

= $\int \sqrt{a^2 - a^2} \sin^2 t \cdot a \cos t dt =$

 $t = \operatorname{arcsin}\left(\frac{n}{a}\right)$ seut = $\frac{u}{a}$

$$= \int a \sqrt{1 - \sin^2 t} - a \cos t dt = a^2 \int \cos^2 t dt = a^2 \int \frac{1 + \cos 2t}{2} dt =$$

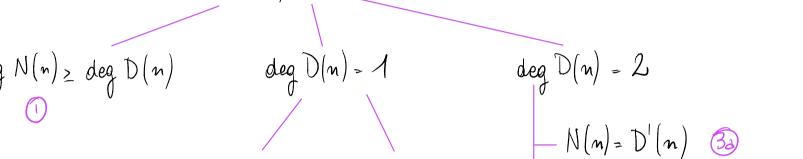
$$= \int d \sqrt{1 - \sin t} - 4 \cos t dt = a^{2} \int \cos^{2} t dt = a^{2} \int \frac{1}{2} \cot^{2} t + \frac{1}{4} a^{2} \int \frac{1}{2} \cot^{2}$$

$$sen U = 2 sent cos U = 2 \cdot \frac{n}{a} \cdot \sqrt{1 - \frac{n^2}{a^2}} = 2 \cdot \frac{n}{a} \cdot \sqrt{1 - \frac{n}{a}} = 2 \cdot \frac{n}{a} \cdot \sqrt{1 -$$

$$= \frac{1}{2} a^2 \operatorname{avcsiu} \frac{n}{a} + \frac{1}{2} n \sqrt{a^2 - n^2} + K$$

Funzioni razionali
$$\frac{P.1884}{D(n)}$$
 dn
$$\int \frac{N(n)}{D(n)} dn$$

$$deg N(n) \ge deg D(n) - 1 \qquad deg D(n) - 2$$



deg N(n) = 1

 $-\Delta > 0$ [di D(n)] 3b

3c)

(3d)

deg N(n) = 0

$$\Rightarrow \int \frac{4n^2 + 10n + 3}{2n^2 + 3n} dn =$$

$$= \int 2 + \frac{hn + 3}{2n^2 + 3n} dn =$$

 $= 2n + \ln |2n^2 + 3n| + K$

$$dn + \left(\frac{4n+3}{2n^2+3}\right) dn =$$

$$= 2 \int dn + \int \frac{4n+3}{2n^2+3n} dn =$$

$$dn + \int \frac{1}{2n^2 + 3n} dn =$$

$$\frac{4n+\sqrt{2n^2+3n}}{2n^2+3n}$$

$$\int 2n^2 + 3n$$

$$\frac{3n+\sqrt{2n^2+3n}}{2n^2+3n}$$

= $2n + K + \int (2n^2 + 3n)^{-1} \cdot D(2n^2 + 3n) dn =$

divisione tra polinomi.

 $4n^2+10n+3=2\cdot(2n^2+3n)+4n+3$

$$= \int \frac{n^4 + 2n - 1}{n^2 - 1} dn =$$

$$= \int (n^2 + 1) dn + \int \frac{2n}{n^2 - 1} dn$$

divisione tra polinomi:

$$n^{h} + 0n^{3} + 0n^{2} + 2n - 1$$
 $n^{2} - 1$
 $\frac{-n^{h}}{n^{2} + 2n - 1}$ $n^{2} + 1$
 $\frac{-n^{2}}{n^{2} + 1}$

 $= \frac{1}{3}n^3 + n + \ln|n^2 - 1| + K$

$$\frac{m^2 + 2n}{-n^2}$$

$$\frac{-n^{2}}{2n}$$

$$n^{h} + 2n - 1 - (n^{2} - 1)(n^{2} + 1) + 2n$$

caso 2a

$$\frac{-n^2}{2n}$$

 $-\int \frac{5}{2n-3} dn = 5 - \frac{1}{2} \int \frac{2}{2n-3} dn = \frac{5}{2} \ln |2n-3| + K$

= n + 2 lu (n + 3) + K

$$\frac{1}{n+3} \int \frac{n+5}{n+3} dn = \int \frac{n+3+2}{n+3} dn = \int dn+2 \int \frac{1}{n+3} dn =$$