Lezione 3-12 Oss: $D(\log(f(x))) = \frac{g'(x)}{f(x)}$ f(x) > 0quind: $\int \frac{f'(x)}{f(x)} dx = \log(f(x)) + c$ Es: $\int arctan \times dx = \int 1 \cdot arctan \times dx = F = x$ = Fg-SFg'dx = x arction x - S x dx = = $\times \cdot \operatorname{arctanx} - \frac{1}{2} \left(\frac{2 \times 1}{1 + x^2} \right) \times = \times \cdot \operatorname{arctanx} - \frac{1}{2} \log \left(1 + x^2 \right) + C$

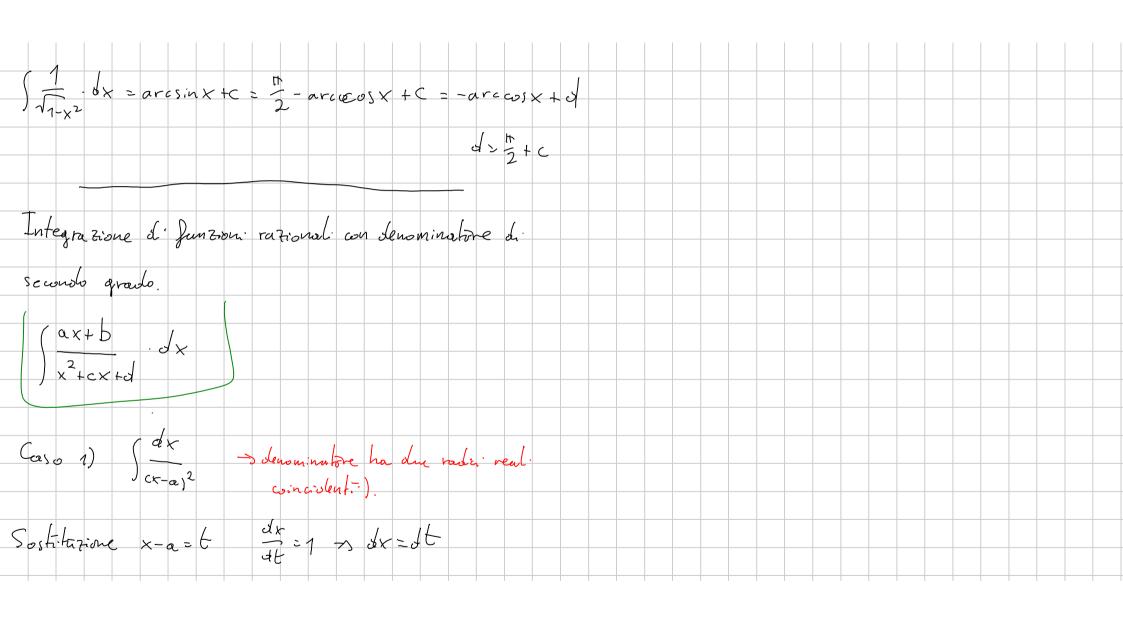
Integratione per s	sostituzione
I, I intervalle d. IR, g: I ->.	R continua.
y: 5 -> I di chusse C? Se	fe'una primitiva dif
allora (fog). q'. dx = (Fo	(Q) + C
Dim:	
ML (CT) (O)	
Notare de (Foy) (Joy). q'	-regula d' denivazione
	per fintien composé.
Es: (x.ex. dx =	Poniams ((x) = x2
$= \left(\frac{\varphi'(x)}{2} \cdot e^{\varphi(x)} dx = \right)$	$(q'c\times)=2\times \Rightarrow x=\frac{(q'c\times)}{2}$

$= \frac{1}{2} \int \varphi'(x) \cdot \beta(\varphi(x)) \cdot dx =$	D(t)= e.6	
	P(t) = e =	
	P(t)=e6	
$= \frac{1}{2} \cdot \left(F(\varphi(x)) + c \right) = \frac{1}{2} \left(e^{x} + c \right) =$		
$=\frac{1}{2}e^{x^{2}}+c^{1}$		
Metodo pratico:		
2		
Sx. ex. dx poniamo x2= t -> t	= U(x) =) dt = 2x	
	dx	
dt=2x.dx	$\frac{db}{2} = x \cdot dx$	
1		

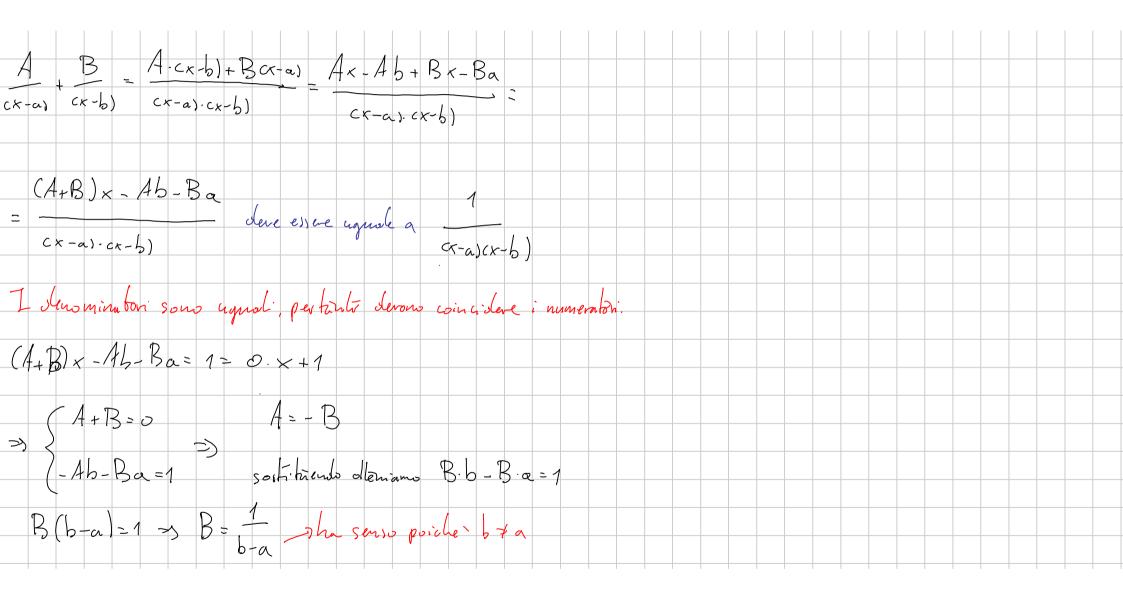
$\int x \cdot e^{x^2} dx = \int e^{6} \cdot d6 = \frac{1}{2} \int e^{6} dt = \frac{1}{2} \left(e^{6} + c \right) = \frac{50 \cdot 16 \cdot 100}{a \cdot 16}$	
2 2) a t la	
s con espressione	
$=\frac{1}{2}\left(e^{x^2}\right)=\frac{1}{2}e^{x}+c$ come functione $d\cdot x$	
= 1 (ext) = 1 ext = 1 come functione	
Es: $\int \frac{dx}{\cos^2 x} dx = \int \frac{\sin x}{\cos^3 x} dx = \int \frac{\sin x}{\cos^3 x} dx$	
cos ² x cos ³ x	
$\frac{dE}{dx} = -\sin x$	
$\frac{1}{dx}$	
$= -\int_{0}^{1} \cdot dt = \int_{0}^{1} dx$ $dt = -\sin x \cdot dx$	
- (L-3) L t-1c 1 sinx.dx = - dt	
$= -\int_{-2}^{3} \frac{t^{-2}}{2t^{-2}} + C = \frac{\sin x \cdot dx}{2t^{-2}} = -\frac{1}{2}$	
- 1 - 2-cos ² x + C	
2+608 X	

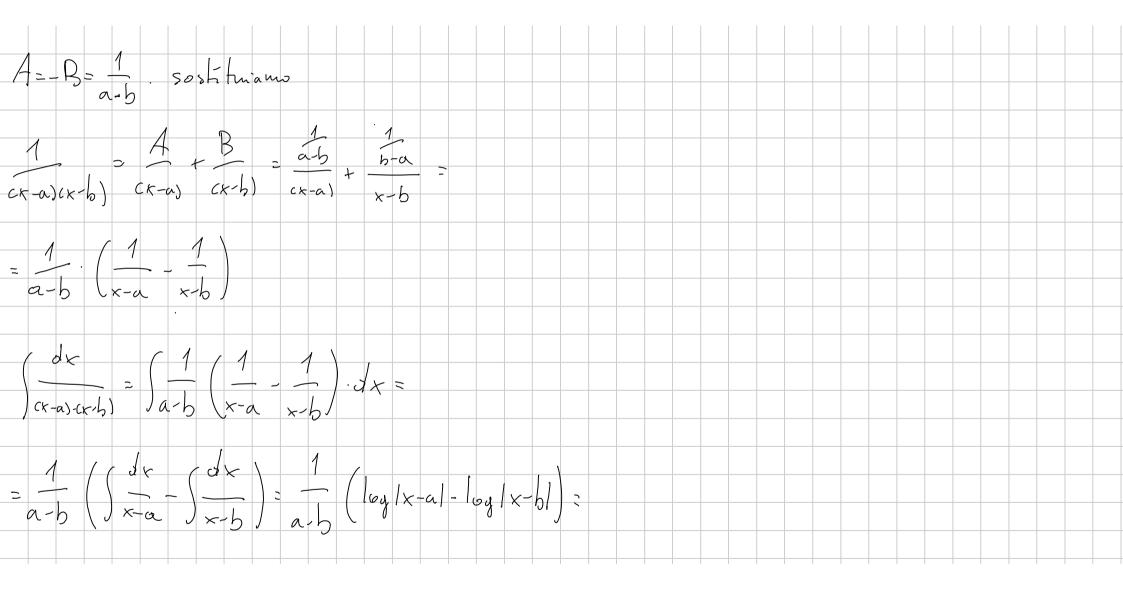
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(1) V	ωs	26.	w	st.	. Jt	_ =_	$\left(1 \right)$	0s (- 1.	cos (t · d	E :	- (205°	6	d	:	-														
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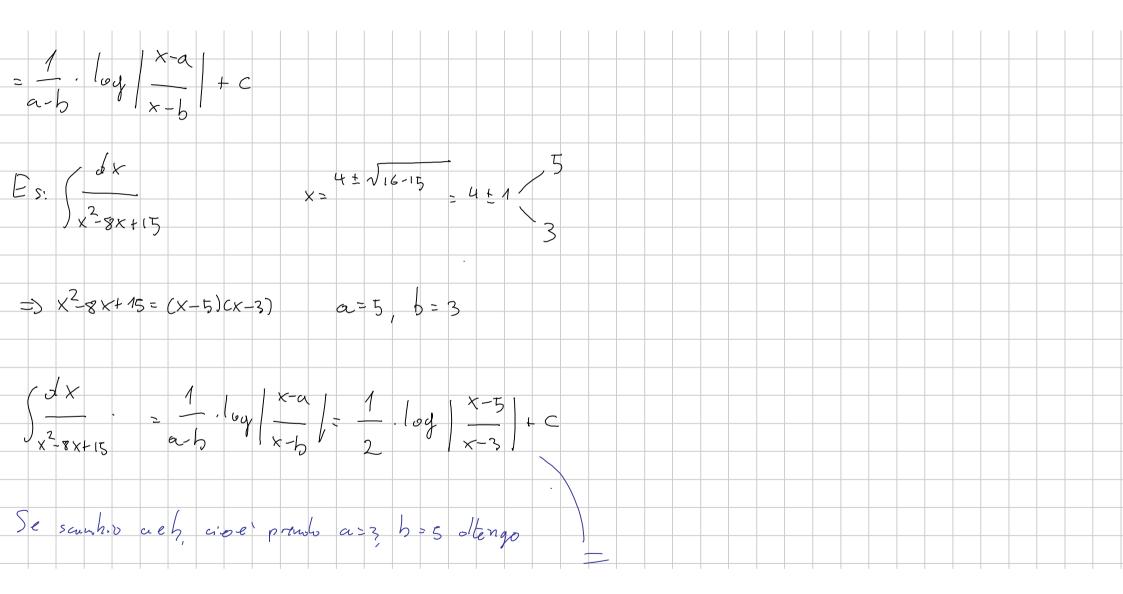
$D(arcsinx) = \frac{1}{\sqrt{1-x^2}} \Rightarrow \int \frac{1}{\sqrt{1-x^2}} dx = arcsinx + c$	
$\int (ar(\omega \leq x) = \frac{-1}{\sqrt{1-x^2}}$	
$D(arcsinx + arcosx) = \frac{1}{\sqrt{1-x^2}} \frac{1}{\sqrt{1-x^2}}$	
n aresinx+arcocosx e una funzione costante su [-1, 1]	
anauti vule la costânte? La culiolo per x =0	
$arcsinx0 + arccos(o) = 0 + \frac{th}{2}$	
D) arcs, hX + arcusx = \frac{1}{2} \rightarrow \text{ arcusx.}	

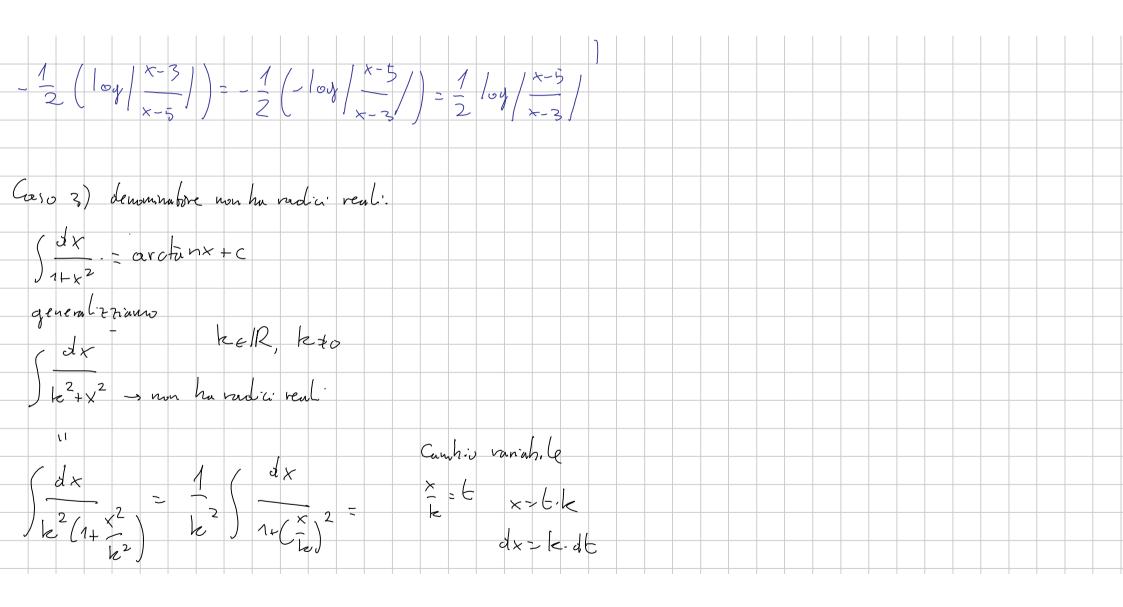


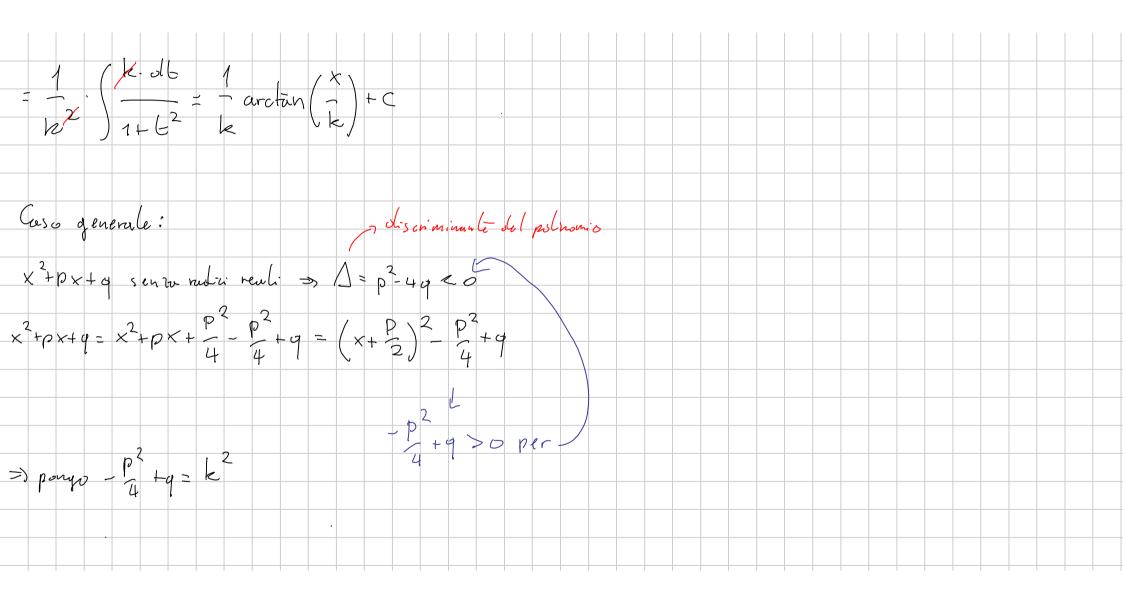
 $\int \frac{dt}{t^2} = \int t^{-2} dt = -1 \cdot t^{-1} + C = -\frac{1}{t} + C = -\frac{1}{x-a} + C$ Caso 2) due radia reuli distinte $\int_{Cx-a)(x-b)}^{dx}$ provians a trouve due numer A e B











dx dx	sostituiamo x+P=t
$\int x^{2} + px + q = \int (x + \frac{p}{2})^{2} + k^{2}$	$\frac{dx}{dt} = 1 \Rightarrow dx = 3t$
	At The state of th
16	
= \ - \ - \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
	\mathcal{J}_{i}
Es: (dx - dx	$\begin{pmatrix} 3x & k^2 = 0 \\ \hline & 2 & 1 \\ \hline & & 2 & 1 \\ \hline & & & 2 \\ \hline & & & & 2 \\ \hline & & & & & 2 \\ \hline & & & & & & 2 \\ \hline & & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ & &$
$\int x^{2} + 2x + 10 \int (x^{2} + 2x + 1) - 1 + 10$	$\int (x+1)^2 + g \qquad _{c=3}$
(db 1 , 6	×+1> f
$= \left(\frac{db}{-1} + \frac{1}{3} \operatorname{arctan} \left(\frac{b}{3} \right) + C = \frac{1}{3} arc$	olx=dt
cero	×+1
precedente = 3 arctun	$\begin{pmatrix} \times + 1 \\ 3 \end{pmatrix} + C$

