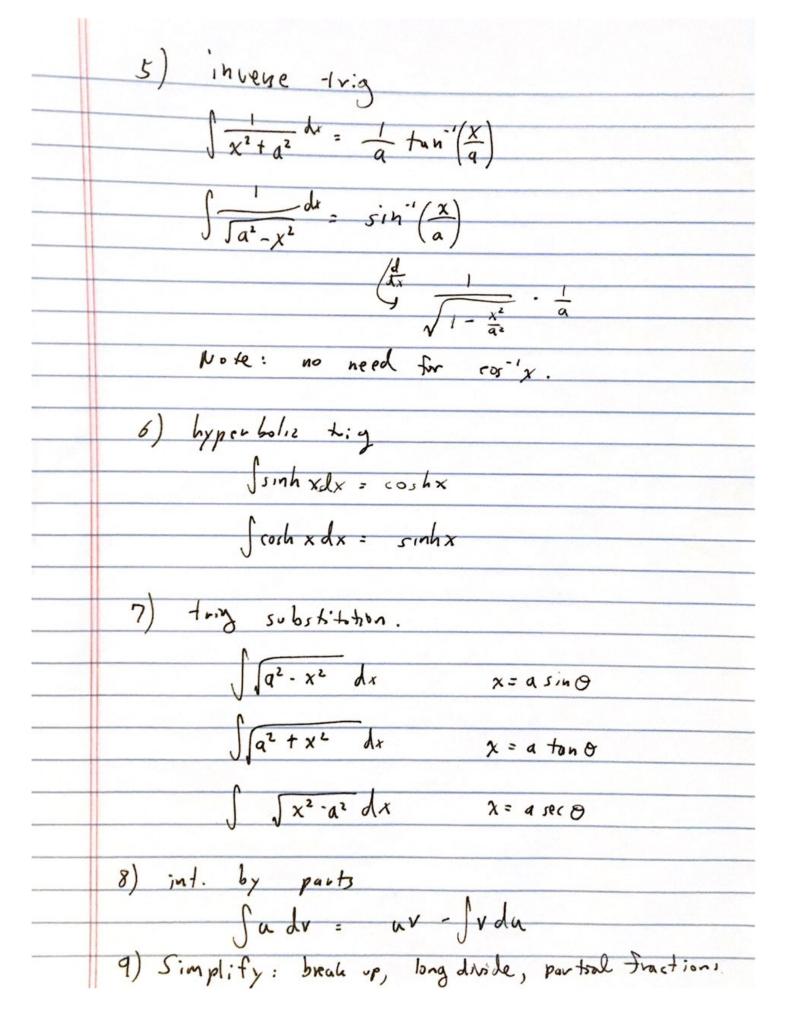
Overview of integration If(x) dx
Methods: 1) reverse poner mle
$\int \chi^n dx = \frac{x^{n+1}}{n+1}, n \neq 1$
2) logs exp. $\int \frac{1}{x} dx =  n x $
$\int e^{x} dx = e^{x} \int S^{x} dx = \frac{S^{x}}{\ln S}$
3) $+r:g$ $\int cos x dx = sin x$
(reverse all try derivatives)
fay I staydx
colx sinx
Sin x - cos x
sec2 x tun x
secutary secx
cscxcot x - csc x
$csc^2 \times - cot \times$
$\int e^{2x} dx = \frac{1}{2} e^{2x}$
$\int \cos 7x  dx = \frac{1}{7} \sin 7x$
tun x dx = In   secx
$\int t u n \times dx = \ln  secx $ $\int \cot x  dx = \ln  sinx $
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$$\int \frac{f(x)}{x^4 - 2x^2 + 4x + 1} dx$$

$$90 f(x) = x + 1 + \frac{4x}{x^3 - x^2 - x + 1}$$

$$\frac{4x}{x^{3}-x^{2}-x+1} = \frac{4x}{(x-1)^{2}(x+1)} = \frac{A}{x-1} + \frac{B}{(x-1)^{2}} + \frac{C}{x+1}$$

$$0 \longrightarrow C+B+C=0$$

$$B-2C=4 \longrightarrow C=2$$

$$\frac{1}{2}B+2C=0$$

$$2B=4 \Longrightarrow B=2$$

$$A=1$$

Finally  $\int f(x) dx = \int x + 1 + \frac{1}{x-1} + \frac{2}{(x-1)^2} - \frac{1}{x+1}$   $= \frac{x^2 + x + \ln|x-1| + \frac{2}{x-1} - \ln|x+1|}{2}$