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Subject:
Date: November 22, 2019 at 4:57 PM
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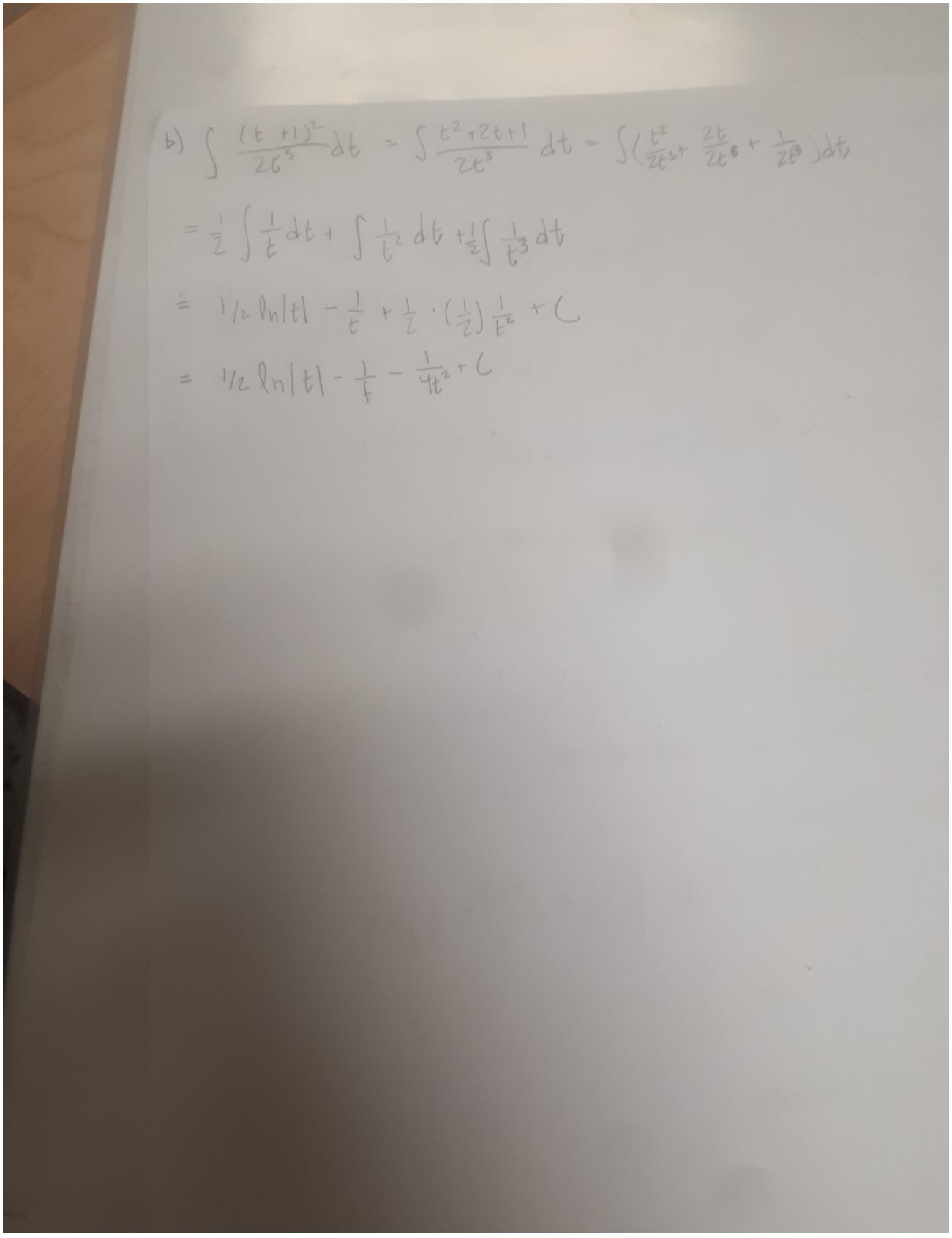

Antiderivative * ALWAYS REMEMBER TO ADD C *

① $\int \sin x\,dx$

Recall: $\frac{d}{dx}\cos x = -\sin x$ so $\int \sin x\,dx = -\cos x + C$

$\Rightarrow \frac{-d}{dx}\cos x = \sin x$

② $\int \cos x\,dx = \sin x + C$

③ $\int x^3\,dx = \frac{x^4}{4} + C$

* $\frac{d}{dx}x^n = nx^{n-1}$

$\frac{1}{n}\frac{d}{dx}x^4 = x^{n-1}$ $n=4$ *

④ $\int \sqrt{x}\,dx = \int x^{\frac{1}{2}}dx = \frac{2}{3}x^{3/2} + C$

$n-1=\frac{1}{2} \rightarrow n=\frac{3}{2}$

⑤ $\int \sec^2 x\,dx = \tan x + C$

⑥ $\int \sec\tan x\,dx = \sec x + C$

⑦ $\int \frac{8}{x}dx = 8\int \frac{1}{x}dx = 8(\ln|x| + C')$

$= 8\ln|x| + C$, where $C = 8C'$

Find the following indefinite integrals

a) $\int \frac{(1+\sqrt{x})^2}{x^2}dx = \int \frac{1+2\sqrt{x}+x}{x^2}dx = \int\left(\frac{1}{x^2} + 2^{1/2-2} + \frac{1}{x}\right)dx$

$= \int \frac{1}{x^2}dx + 2\int x^{-3/2}dx + \int \frac{1}{x}dx$

$= -\frac{1}{x} + 2(-2)^{-1/2} + \ln|x| + C$

$= -\frac{1}{x} - \frac{4}{\sqrt{x}} + \ln|x| + C$