citación en clase

$$\int \frac{\operatorname{sen} 2x}{1+\cos^2 x} = \int \frac{\operatorname{sen}(2x)}{1+\cos^2 x}\,dx$$

$u = \cos x$

$du = -\operatorname{sen} x\,dx$

$$\int \frac{2\operatorname{sen}(u)}{1+u^2} = \int \frac{2(-du)(u)}{1+u^2} = -2\int \frac{u}{1+u^2}\,du$$

$E = 1+u^2$

$dE = 2u\,du$

$$-2\int \frac{1}{E}\cdot\frac{dE}{2}$$

$$\frac{dE}{2} = u\,du$$

$$-\int \frac{1}{u}\,du = -\ln(E) = -\ln(1+\cos^2 x) + C$$

2)

$$-\ln(u) + C$$

$$\int \operatorname{sen} t\,\sec^2(\cos t)\,dt$$

$u = \cos t$

$du = -\operatorname{sen} t\,dt$

$dt = \frac{1}{-\operatorname{sen} t}\,du$

$$-\int \sec^2(u)\,du$$

$$-\tan(\cos t) + C$$

3)

$$\int_0^1 \frac{t^2+1}{t^2+2}$$

$u = t^2+2$

$du = (t^2-1)\,dz$

$\ln(t+1) - \ln(1)$

$\ln(t+1) + C$