$$\int \tan^2\theta \, d\theta$$

$$\int \frac{\sin^2\theta}{\cos^2\theta} \, d\theta$$

$$\int \sin^2\theta \sec^2\theta \, d\theta$$

$$\int \frac{1-\cos^2\theta}{\cos^2\theta} \, d\theta$$

$$\int \frac{1}{\cos^2\theta} - 1 \, d\theta$$

$$\int \sec^2\theta - 1 \, d\theta$$

$$\tan\theta - \theta + C$$

$$\frac{\sin^2\theta}{\cos^2\theta} + \frac{\cos^2\theta}{\cos^2\theta} = \frac{1}{\cos^2\theta}$$

$$\tan^2\theta + 1 = \sec^2\theta$$

$$\tan^2\theta = \sec^2\theta - 1$$

$$\tan^2\theta$$

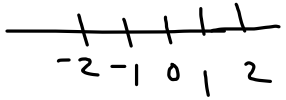
$$(\tan(x))^2$$

$e^{\frac{t}{2}} - \frac{5}{t^2}$

$\int x^n dx$

$\frac{x^{n+1}}{n+1}$

$\int \frac{5}{t^2} dt \Rightarrow \int 5t^{-2} dt$



$5(-1t^{-1}) + C$

$-\frac{5}{t} + C$

$\int t^4 dt = \frac{t^5}{5} + C$

$\int \frac{1}{t^4} dt \Rightarrow \int t^{-4} dt$

$\rightarrow \frac{t^{-3}}{-3} + C$

$-\frac{3}{t^3} + C$

$\int t^{-1} dt = \ln|t| + C$

$y = s(t)$

$y = v(t)$

$y = a(t)$

We want $v(t) = 0$ when $s(t) = 242$

$$\frac{d^2s}{dt^2} = -k$$

$$\frac{ds}{dt} = -kt + c$$

$\frac{ds}{dt} = 88$ when $t = 0$

$0 = -k(0) + 88$

$$\frac{ds}{dt} = -kt + 88$$

$$t = \frac{88}{k}$$

Substitute

$$s(t) = -\frac{kt^2}{2} + 88t + C$$

$C = 0$

$$s(t) = -\frac{k\left(\frac{88}{k}\right)^2}{2} + 88\left(\frac{88}{k}\right)$$

$$242 = -\frac{\frac{88^2}{k}}{2} + \frac{88^2}{k}$$

$$242 = -\frac{1}{2}\left(\frac{88^2}{k}\right) + \frac{88^2}{k}$$

$$16 = k$$