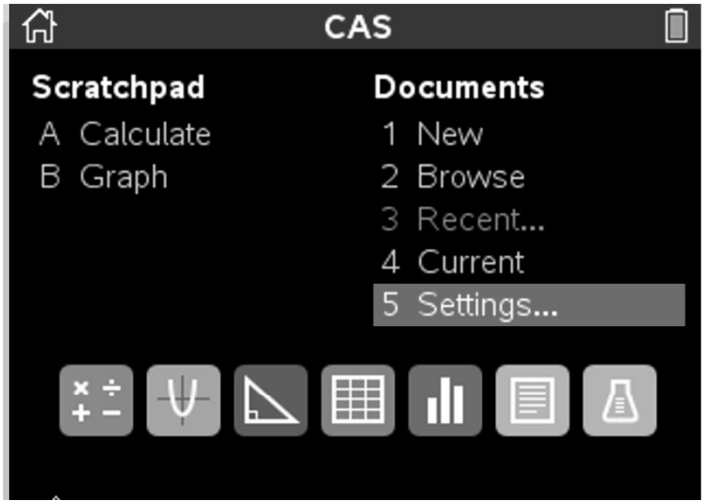
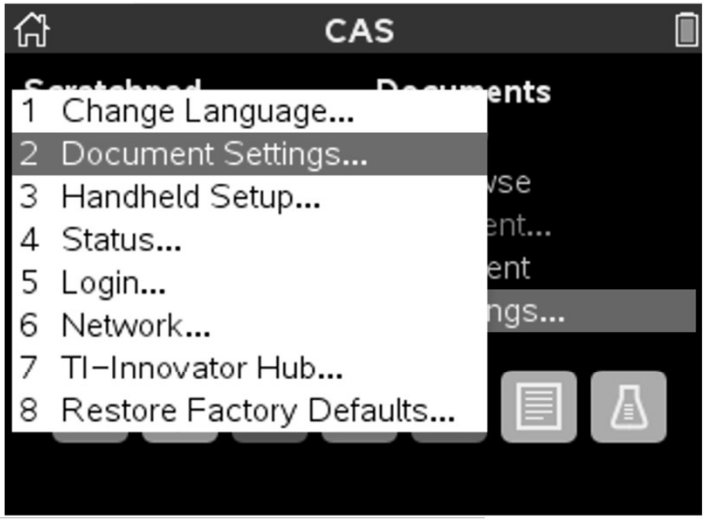
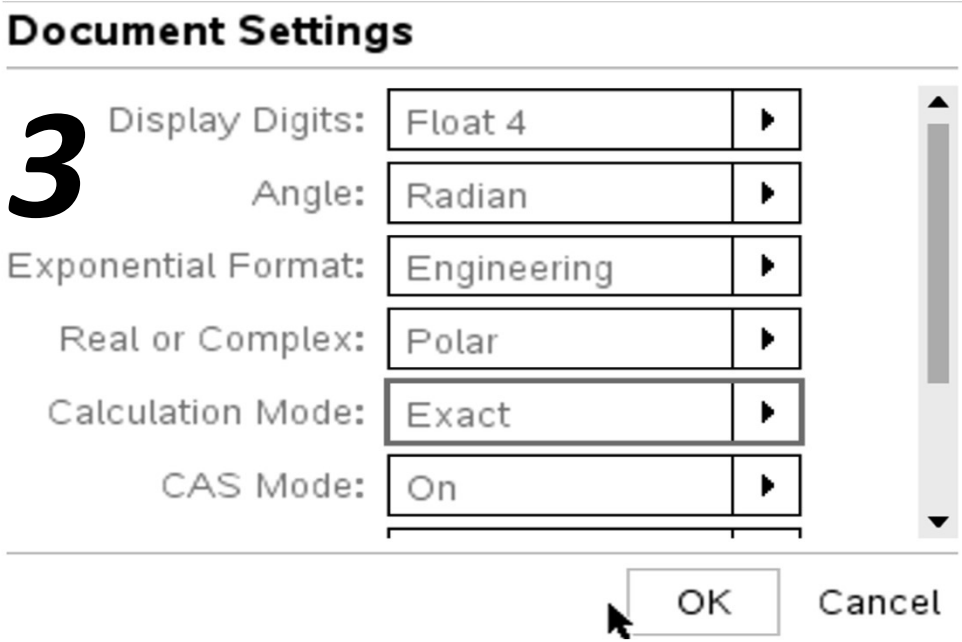
Calculations with Waveforms

- *DC*
- *Sine*
- *Ramp*
- *Exponentials (2)*
- *plot*
- *derivative*
- *integal*
- *simplify*

TI Nispire setup

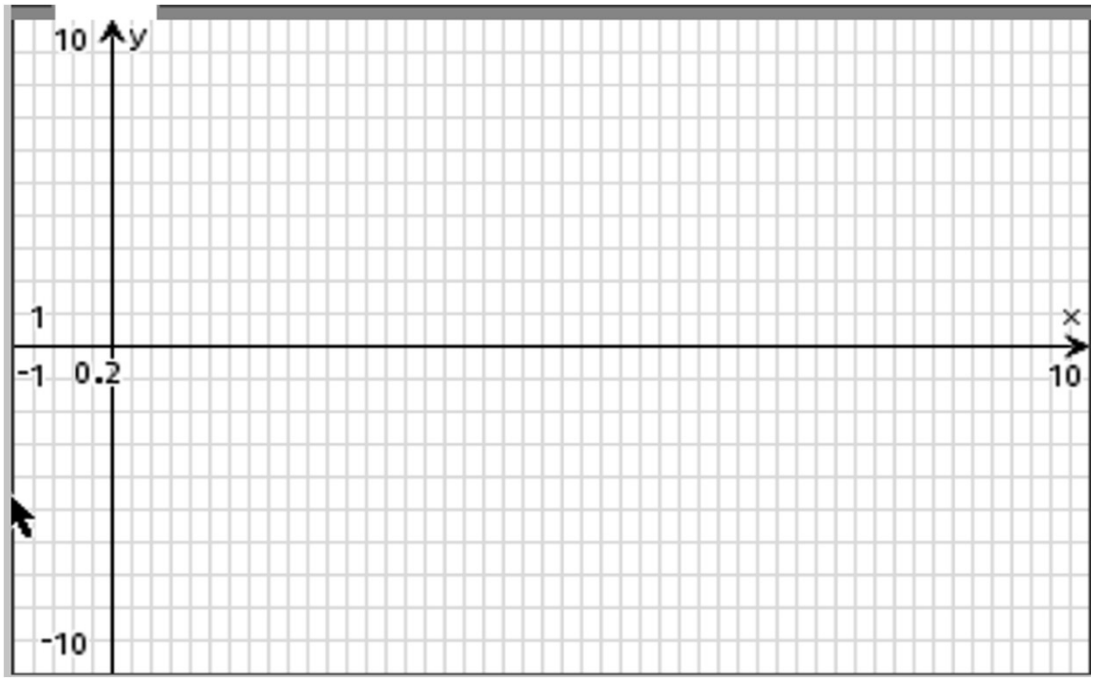






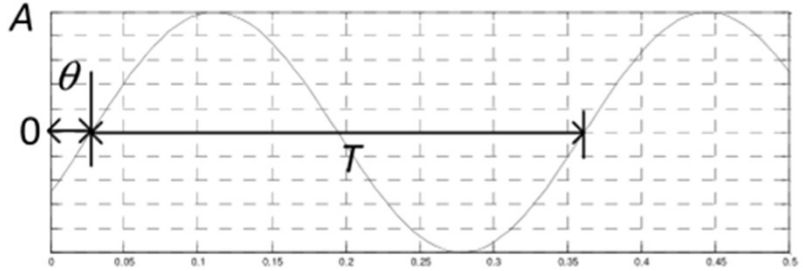
DC

- A
- A = your age/4
- Sketch: x 0 => 7 s



- $\frac{d}{dt}A = ?$
- $\int A\, dt = ?$

Sine

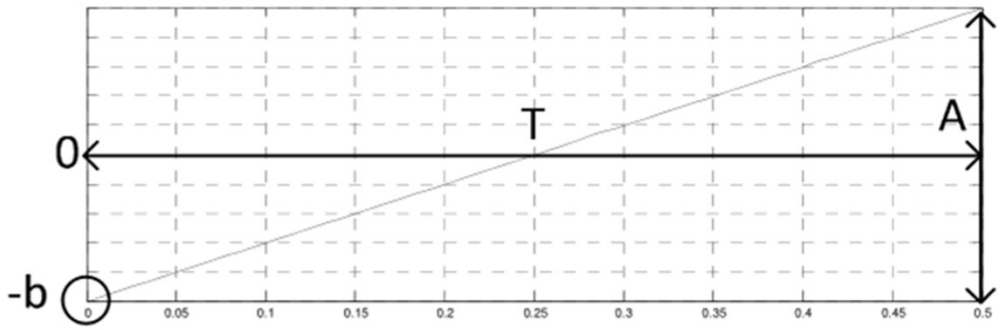


- $Asin(2\pi ft - \theta)$ $f = \frac{1}{T}$
- *A* = _____
- *T* = _____ μsec f = _____ Θ = _____ deg
- Write the equation = _____ rad

- $\frac{d}{dt} Asin(2\pi ft - \theta) = ?$

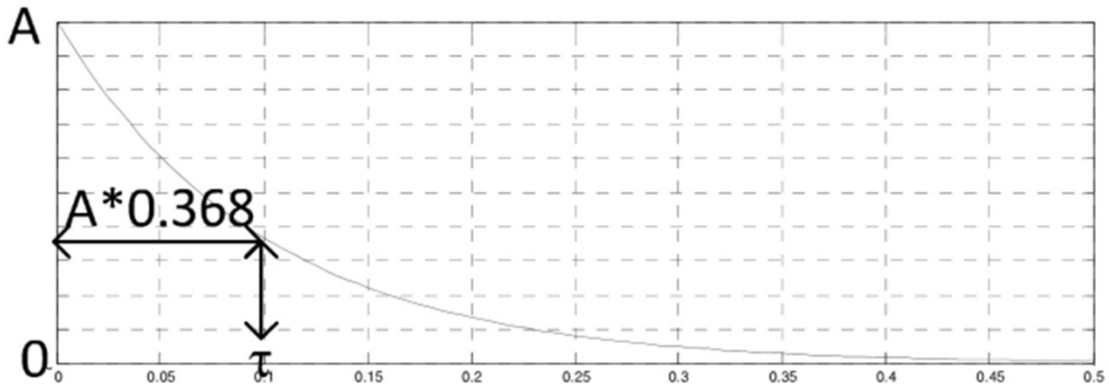
- $\int Asin(2\pi ft - \theta)dt = ?$

Ramp



- A = _____ b = _____
- Write the equation
- $mt + b = \frac{A}{T}t + b$
- $\frac{d}{dt}(\frac{A}{T}t + b) =$ _____
- $\int(\frac{A}{T}t + b)\,dt =$ _____

Exponential Spike



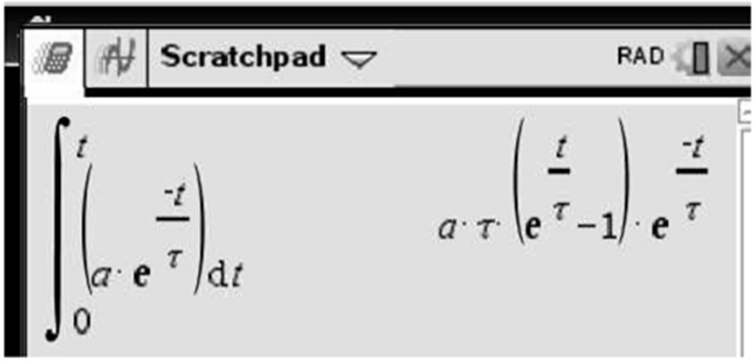
- $Ae^{\frac{-t}{\tau}}$
- A = _____ τ = _____ msec
- Write the equation
- Plot is for 0 => 0.5 ms

- $\frac{d}{dt}Ae^{\frac{-t}{\tau}} = ?$

- $\int Ae^{\frac{-t}{\tau}}dt = ?$

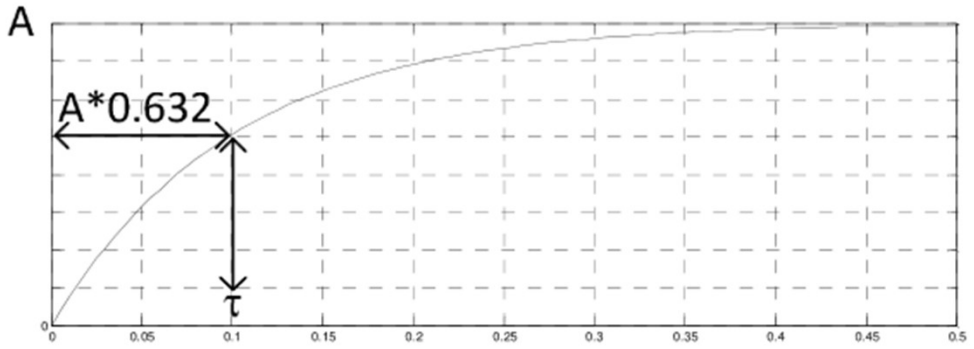
Exponential Spike

Simplify



$$\int_0^t \left(Ae^{\frac{-t}{\tau}}\right) dt = A\tau\left(1 - e^{\frac{-t}{\tau}}\right)$$

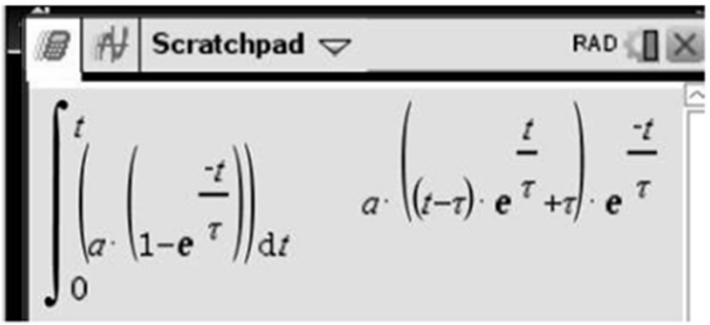
Exponential Rise



- $A\left(1-e^{\frac{-t}{\tau}}\right)$
- A = _____ τ = _____ msec
- Write the equation
- Plot is for t 0 => 0.5 ms
- $\frac{d}{dt}A\left(1-e^{\frac{-t}{\tau}}\right) = ?$
- $\int A\left(1-e^{\frac{-t}{\tau}}\right)dt = ?$

Exponential Rise

Simplify



$$\int_0^t \left[A\left(1 - e^{\frac{-t}{\tau}}\right)\right] dt = A\left[t - \tau\left(1 - e^{\frac{-t}{\tau}}\right)\right]$$