

# ELECTRICAL ENGINEERING MADE EASY - FUNCTIONALITY

for the TiNspire CX CAS – [www.TiNspireApps.com](http://www.TiNspireApps.com)

## ELECTRICITY

Electricity & Induction

Electricity: Coulombs Law

Electricity: Voltage  $V=E*d$

Electricity:  $\lambda$ Voltage  $\lambda V=W/q$

Electricity:  $\lambda V=Q/C$

Electricity:  $P=Po*[1+a*(T-To)]$

Electricity:  $q=Q*exp(-t/(R*C))$

Electricity:  $q=Q*(1-exp(-t/(RC)))$

Electricity:  $C=K*eo*A/d$

Electricity:  $E=1/2*C*\lambda V^2$

Electricity:  $R=\lambda*1/A$

Electricity: Flux  $F=E*A$

Electricity:  $E=Q/(4pr^2eo)$

Electricity:  $F=s*Q/eo$

Electricity:  $V=k*q/r$

## INDUCTION

Induction:  $EMF=B(L)(V)$

Induction:  $I=V/R$

Induction:  $Pac=1/2(Pacmax)$

Induction:  $Pac=I\_eff^2*R$

Induction:  $I\_eff=v(1/2I_{max}^2)$

Induction:  $V\_eff=v(1/2(V_{max}^2))$

Induction:  $Vs/Vp=Ns/Np$

Induction:  $Vp*Ip=Vs*Is$

## MAGNETISM

Magnetism:  $F=q*v*B*\sin(\theta)$

Magnetism:  $r=mv/(qB)$

Magnetism:  $v=E/B$

Magnetism:  $F=B*I*L*\sin(\theta)$

Magnetism:  $N=T*A*m$

Magnetism:  $t=F*r$

Magnetism:  $t=B*I*A*\sin(\theta)$

Magnetism:  $t=B*I*A*N*\sin(\theta)$

Magnetism:  $B=\mu o*I/2pr$

Magnetism:  $F/l=\mu o*I1*I2/(2pd)$

Magnetism:  $B=\mu o*I/2R$

Magnetism:  $B=N*\mu o*I/2R$

Magnetism:  $B=\mu o*N/I$

Magnetism:  $F=B*A*\cos(\theta)$

Magnetism:  $\lambda F=BA(\cos\theta f-\cos\theta i)$

Magnetism:  $e=-N*(\lambda F)/(\lambda t)$

Magnetism:  $F=I*B*I$

Magnetism:  $\text{Emf} = NBA \cdot \Delta \sin(\Delta t)$   
Magnetism:  $\text{Emf} = -L \cdot (\Delta I) / (\Delta t)$   
Magnetism:  $R = P \cdot I / A$

#### CIRCUITS & LAWS

Circuits & Laws:  $P = V \cdot I$   
Circuits & Laws:  $V = R \cdot I$   
Circuits & Laws:  $P = I^2 \cdot R$   
Circuits & Laws:  $P = V^2 / R$   
Circuits & Laws:  $V_c = (V \cdot R_2) / (R_1 + R_2)$   
Circuits & Laws: Read 1. Kirchhoff Law  
Circuits & Laws: Read 2. Kirchhoff Law

#### ENERGY

Heat:  $Q = m \cdot c \cdot \Delta T$   
Heat:  $Q = m \cdot L$   
Heat:  $W = \lambda P \cdot d \cdot \Delta V$   
Heat:  $\lambda E = Q - W$   
Heat: Conduction  
Heat: Convection  
Heat: Radiation  
Heat:  $w = -n \cdot r \cdot t \cdot \ln(v_f / v_i)$   
Miscellaneous: Heat (H)  
Read Dissipated Energy  
Miscellaneous:  $W = F \cdot s \cdot \cos(\theta)$   
Miscellaneous:  $W = F \cdot s \cdot \sin(\theta)$   
Miscellaneous: Power =  $W / t$   
Miscellaneous:  $E = \mu \cdot dx$   
Work Energy Theorem  
Photon Energy:  $E = h \cdot c / \lambda$

#### EXTRAS

Solve Any Equation  
Solve 2x2 System of Equations  
Periodic Table of Elements: Symbol  
Periodic Table of Elements: Element Name  
Read: Useful Constants  
Find Absolute Error and % Error  
Convert: Normal to Scientific Notation & vice versa

#### SPECIFIC HEATS

Water  
Ice  
Steam  
Methyl Alcohol  
Benzene  
Wood  
Soil

Air  
Aluminum  
Marble  
Glass  
Iron/Steel  
Copper  
Silver  
Mercury  
Gold  
Lead