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Continuous Time Signals Formulas

Calculators!

Examples!

Conversions!

List of 15 Continuous Time Signals Formulas

Continuous Time Signals

1) Angular Frequency of Signal

Open Calculator

fx $\omega = 2 \cdot \frac{\pi}{T}$

ex $2.001014\text{Hz} = 2 \cdot \frac{\pi}{3.14\text{s}}$

2) Coupling Co-efficient

Open Calculator

fx $\gamma = \frac{C_o}{C + C_o}$

ex $0.299764 = \frac{3.81\text{F}}{8.9\text{F} + 3.81\text{F}}$

3) Current for Loaded Admittance

Open Calculator

fx $i_u = i_g \cdot \frac{Y_u}{Y_g + Y_u}$

ex $1.486567\text{A} = 4.15\text{A} \cdot \frac{1.2\Omega}{2.15\Omega + 1.2\Omega}$

4) Damping Co-efficient

Open Calculator

fx $$\zeta = \frac{1}{2 \cdot A_o} \cdot \sqrt{\frac{f_{in}}{f_h}}$$

ex $$0.070189\text{Ns/m} = \frac{1}{2 \cdot 21.5} \cdot \sqrt{\frac{50.1\text{Hz}}{5.5\text{Hz}}}$$

5) Damping Co-efficient in State-Space Form

Open Calculator

fx $$\zeta = R_o \cdot \sqrt{\frac{C}{L}}$$

ex $$0.060896\text{Ns/m} = 0.05\Omega \cdot \sqrt{\frac{8.9\text{F}}{6\text{H}}}$$

6) Frequency of Signal

Open Calculator

fx $$f = 2 \cdot \frac{\pi}{\omega}$$

ex $$3.141593\text{Hz} = 2 \cdot \frac{\pi}{2\text{Hz}}$$

7) Inverse of System Function

Open Calculator

fx $$H_{inv} = \frac{1}{H_s}$$

ex $$0.416667 = \frac{1}{2.4}$$

8) Natural Frequency

Open Calculator

fx $$f_n = \sqrt{f_{in} \cdot f_h}$$

ex $$16.5997\text{Hz} = \sqrt{50.1\text{Hz} \cdot 5.5\text{Hz}}$$

9) Open Loop Gain of Signal

Open Calculator

fx $$A_o = \frac{1}{2 \cdot \zeta} \cdot \sqrt{\frac{f_{in}}{f_h}}$$

ex $$21.55805 = \frac{1}{2 \cdot 0.07\text{Ns/m}} \cdot \sqrt{\frac{50.1\text{Hz}}{5.5\text{Hz}}}$$

10) Output of Time Invariant Signal

Open Calculator

fx $$y_t = x_t \cdot h_t$$

ex $$14.82 = 2.85 \cdot 5.2$$

11) Periodic Signal of Time Fourier

Open Calculator

fx $$x_p = \sin\left(\frac{2 \cdot \pi}{t}\right)$$

ex $$0.642788 = \sin\left(\frac{2 \cdot \pi}{9}\right)$$

12) Resistance with respect to Damping Coefficient

Open Calculator

fx $$R_o = \frac{\zeta}{\left(\frac{C}{L}\right)^{\frac{1}{2}}}$$

ex $$0.057475\Omega = \frac{0.07\text{Ns/m}}{\left(\frac{8.9\text{F}}{6\text{H}}\right)^{\frac{1}{2}}}$$

13) Time Period of Signal

Open Calculator

fx $$T = 2 \cdot \frac{\pi}{\omega}$$

ex $$3.141593\text{s} = 2 \cdot \frac{\pi}{2\text{Hz}}$$

14) Transfer Function

Open Calculator

fx $$H = \frac{S_{out}}{S_{in}}$$

ex $$0.97619 = \frac{4.1}{4.2}$$

15) Voltage for Loaded Admittance

Open Calculator

fx $$V_u = \frac{i_g}{Y_g + Y_u}$$

ex $$1.238806\text{V} = \frac{4.15\text{A}}{2.15\Omega + 1.2\Omega}$$

Variables Used

- A_o Open Loop Gain
- C Capacitance *(Farad)*
- C_o Input Capacitance *(Farad)*
- f Frequency *(Hertz)*
- f_h High Frequency *(Hertz)*
- f_{in} Input Frequency *(Hertz)*
- f_n Natural Frequency *(Hertz)*
- H Transfer Function
- H_{inv} Inverse System Function
- H_s System Function
- h_t Impulse Response
- i_g Current for Internal Admittance *(Ampere)*
- i_u Current for Loaded Admittance *(Ampere)*
- L Inductance *(Henry)*
- R_o Initial Resistance *(Ohm)*
- S_{in} Input Signal
- S_{out} Output Signal
- t Time Periodic Signal
- T Time Period *(Second)*
- V_u Voltage of Loaded Admittance *(Volt)*
- x_p Periodic Signal

- x_t Time Invariant Input Signal
- Y_g Internal Admittance *(Ohm)*
- y_t Time Invariant Output Signal
- Y_u Loaded Admittance *(Ohm)*
- γ Coupling Coefficient
- ζ Damping Co-efficient *(Newton Second per Meter)*
- ω Angular Frequency *(Hertz)*

Constants, Functions, Measurements used

- Constant: **pi**, 3.14159265358979323846264338327950288
  Archimedes' constant
- Function: **sin**, sin(Angle)
  Trigonometric sine function
- Function: **sqrt**, sqrt(Number)
  Square root function
- Measurement: **Time** in Second (s)
  Time Unit Conversion
- Measurement: **Electric Current** in Ampere (A)
  Electric Current Unit Conversion
- Measurement: **Frequency** in Hertz (Hz)
  Frequency Unit Conversion
- Measurement: **Capacitance** in Farad (F)
  Capacitance Unit Conversion
- Measurement: **Electric Resistance** in Ohm (Ω)
  Electric Resistance Unit Conversion
- Measurement: **Inductance** in Henry (H)
  Inductance Unit Conversion
- Measurement: **Electric Potential** in Volt (V)
  Electric Potential Unit Conversion
- Measurement: **Damping Coefficient** in Newton Second per Meter (Ns/m)
  Damping Coefficient Unit Conversion

Check other formula lists

- **Continuous Time Signals Formulas**
- **Discrete Time Signals Formulas**

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