



# Unsteady Flow in a Confined Aquifer Formulas

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# List of 11 Unsteady Flow in a Confined Aquifer Formulas

# Unsteady Flow in a Confined Aquifer C

1) Distance from Pumping Well given Storage Coefficient 🕑

fx 
$$\mathbf{r} = \sqrt{\left(2.25\cdot\mathrm{T}\cdotrac{\mathrm{t}_0}{\mathrm{S}}
ight)}$$

ex 
$$3.004409 \mathrm{m} = \sqrt{\left(2.25 \cdot 11 \mathrm{m}^2 / \mathrm{s} \cdot rac{31 \mathrm{s}}{85}
ight)}$$

#### 2) Drawdown 🕑

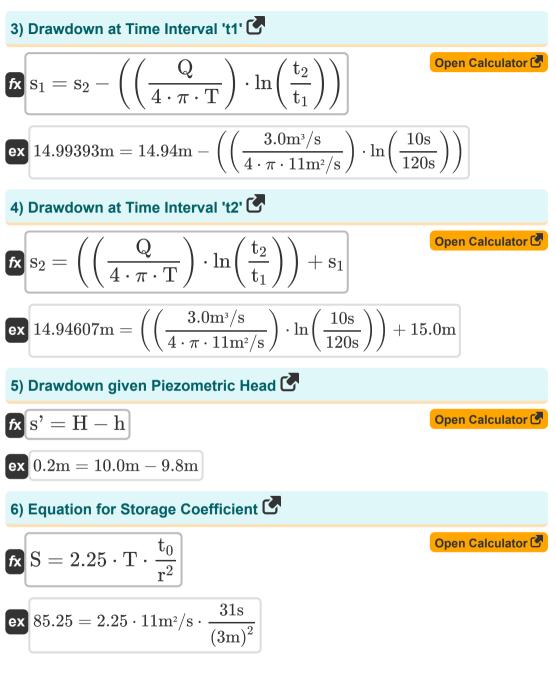
fx 
$$s_t = \left(rac{Q}{4\cdot\pi\cdot T}
ight)\cdot \ln\!\left(rac{2.2\cdot T\cdot t}{r^2\cdot S}
ight)$$

ex 
$$0.030688m = \left(\frac{3.0m^3/s}{4 \cdot \pi \cdot 11m^2/s}\right) \cdot \ln\left(\frac{2.2 \cdot 11m^2/s \cdot 130s}{(3m)^2 \cdot 85}\right)$$



Open Calculator

Open Calculator





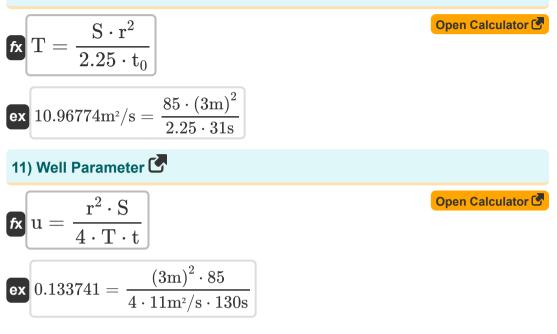
()

### 7) Equation for Well Function series to number of 4 digits 🕑

ex 
$$30.90909s = \frac{85 \cdot (3m)^2}{2.25 \cdot 11m^2/s}$$



#### 10) Transmissivity about given Storage Coefficient 🖸







### Variables Used

- h Drawdown (Meter)
- H Initial Constant Piezometric Head (Meter)
- **Q** Discharge (Cubic Meter per Second)
- **r** Distance from Pumping Well (Meter)
- S' Possible Drawdown in Confined Aquifer (Meter)
- S Storage Coefficient
- S1 Drawdown at Time Interval t1 (Meter)
- S2 Drawdown at Time Interval t2 (Meter)
- **S**t Total Drawdown (*Meter*)
- t Time Period (Second)
- T Transmissivity (Square Meter per Second)
- t<sub>0</sub> Starting Time (Second)
- **t<sub>1</sub>** Time of Drawdown (t1) (Second)
- t<sub>2</sub> Time of Drawdown (t2) (Second)
- **U** Well Parameter
- W<sub>u</sub> Well Function of u



## **Constants, Functions, Measurements used**

- Constant: pi, 3.14159265358979323846264338327950288 Archimedes' constant
- Function: In, In(Number) The natural logarithm, also known as the logarithm to the base e, is the inverse function of the natural exponential function.
- Function: sqrt, sqrt(Number) A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.
- Measurement: Length in Meter (m) • Length Unit Conversion
- Measurement: Time in Second (s) Time Unit Conversion
- Measurement: Volumetric Flow Rate in Cubic Meter per Second (m<sup>3</sup>/s) Volumetric Flow Rate Unit Conversion
- Measurement: Kinematic Viscosity in Square Meter per Second (m<sup>2</sup>/s) Kinematic Viscosity Unit Conversion 🕻

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### Check other formula lists

- Aquifer Analysis and Properties
   Formulas
- Coefficient of Permeability
   Formulas
- Distance-Drawdown Analysis
   Formulas
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