Linear Interpolation Calculator (Steam Tables and Data)

Value of y at x between two known points by straight-line interpolation, the way steam table and data table values are read between rows, with a warning when extrapolating.

Method: Linear (Lagrange first-order) interpolation

Input parameters

Unit system: SI

Parameter	Value	Unit
First known x	10.000	
y at x_1	179.88	
Second known x	12.000	
y at x_2	187.96	
x to interpolate at	11.000	

Calculated results

Parameter	Value	Unit
Interpolated value	183.92	
Slope $(y_2 - y_1) / (x_2 - x_1)$	4.0400	
Position between the points $(x - x_1) / (x_2 - x_1)$	0.50000	

Formula and method

$$y = y_1 + (x - x_1)\,\frac{y_2 - y_1}{x_2 - x_1}$$

Variables

x_1	First known x	-
y_1	y at x_1	-
x_2	Second known x	-
y_2	y at x_2	-
x	x to interpolate at	-
y	Interpolated value	-
m	Slope $(y_2 - y_1) / (x_2 - x_1)$	-
f	Position between the points $(x - x_1) / (x_2 - x_1)$	-

Method and standards

Straight line through two points.

Assumptions and limits

- Straight line between the two points.

References

- Linear (Lagrange first-order) interpolation

Report details

Report reference	FCC-KPZR-ZTJN (the same inputs always give the same reference)
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/geometry/linear-interpolation

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.