Linear Interpolation with Excel
Bill Menke, July 2016

It can be done, but it’s not pretty! Here’s how I do it, using an algorithm that I modified from:
www.blueleafsoftware.com/Products/Dagra/LinearInterpolationExcel.php#Excel

First, cell definitions, corresponding to the figure below.

Columns A and B are the uninterpolated (X,Y) pairs.

Cell D1 is just a title and is the character string “Dx”

Cell D2 is the interpolation step size that you want

Cell D3 is just a title and is the character string “Old N”

Cell D4 is the number of rows of uninterpolated data

Columns E and F are the interpolated (X, Y) values.

To set column E, type into Cell E1 the formula

= A1

and paste into Cell E2 the formula

=E1+$D$2

and then fill the column down (starting from row 2) to the desired length. The last value must be smaller (though possibly only very slightly smaller) than the last X value in Column A.

To set column F, paste into Cell F1 the formula

=FORECAST(E1,OFFSET(INDIRECT("$B$1:$B$"&$D$4),MATCH(E1,INDIRECT("$A$1:$A$"&$D$4),1)-1,0,2),OFFSET(INDIRECT("$A$1:$A$"&$D$4),MATCH(E1,INDIRECT("$A$1:$A$"&$D$4),1)-1,0,2))

(yeah, I know, messy!) and then fill the column down (starting from row 1) to the same length as Column E. The column should fill in as the interpolated values.
Bill Menke's Excel Interpolator, July 2016

**Instructions**

1. Paste uninterpolated (X,Y) data into columns A,B
2. Change cell D4 to the number of uninterpolated data pairs
3. Change cell D2 to the interpolation step size you desire
4. Fill down column E of New X's from row 2 to however long you need
5. Fill down column F of New Y's from row 1 to the same length as column E

<table>
<thead>
<tr>
<th>A</th>
<th>1</th>
<th>B</th>
<th>1</th>
<th>C</th>
<th>1</th>
<th>D</th>
<th>1.055</th>
<th>E</th>
<th>1.904167</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2.2</td>
<td>2</td>
<td>0.765</td>
<td>1</td>
<td>1.605</td>
<td>1.605</td>
<td>1.504167</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>4.2</td>
<td>3</td>
<td>Old N</td>
<td>2.2</td>
<td>2.005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6.2</td>
<td>4</td>
<td>x</td>
<td>2.815</td>
<td>3.3075</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>8.1</td>
<td>3</td>
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<td>3.42</td>
<td>2.61</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>10.9</td>
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<td></td>
<td>5.84</td>
<td>3.82</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Graphs**

- Series 1: Data from row 1 to row 31
- Series 2: Interpolated data from row 4 to row 31