Evaluating a Formula like in a Texbook

Evals

Sintaxis

Evals(*eq*, *values*, *n*, *u*)	Try to show eq at values with n decimals in the unit u as in a textbook.
Evals(*eq*, *values*, *n*)	For equations without units
Evals(*eq*, *values*)	Uses the decimals in the values, with a maximun of 6.

- For specify units in values, use ~ as first character, instead '
- If the equation have constants with decimals, mask it with v2s

Example

$$E := Evals\left(\frac{a\cdot c + b\cdot\cos(c)}{c^2 + v2s(500.37)}, \left[194400\ \ 44640\ \ \frac{5\cdot\pi}{12}\right]\right)$$

Using maximun 6 decimals

$$E = \left[\frac{a\cdot c + b\cdot\cos(c)}{500.37 + c^2} = \frac{194400.\cdot 1.308997 + 44640.\cdot\cos(1.308997)}{500.37 + 1.308997^2} = \frac{266022.696343}{502.083473} = 529.837588\right]$$

Example

$$E := Evals\left(\frac{a\cdot c + b\cdot\cos(c)}{c^2 + v2s(500.37)}, \left[194400\ \ 44640\ \ \frac{5\cdot\pi}{12}\right], 3\right)$$

Using 3 decimals for all numbers

$$E = \left[\frac{a\cdot c + b\cdot\cos(c)}{500.370 + c^2} = \frac{194400.000\cdot 1.309 + 44640.000\cdot\cos(1.309)}{500.370 + 1.309^2} = \frac{266023.150}{502.083} = 529.838\right]$$

Example

If the output is too long, it could be arranged into a table

$$E := Evals\left(\frac{a\cdot c + b\cdot\cos(c)}{c^2 + v2s(500.37)}, \left[0.18\cdot\frac{in}{s^2}\ \ 12.4\cdot\frac{ft}{min^2}\ \ 75\cdot deg\right], 3, \frac{ft}{hr^2}\right)$$

$$\frac{a\cdot c + b\cdot\cos(c)}{500.370 + c^2}$$

$$= \frac{0.180\cdot in\cdot 75.000\cdot deg\cdot min^2 + 12.400\cdot ft\cdot\cos(75.000\cdot deg)\cdot s^2}{min^2\cdot s^2\cdot\left(500.370 + 75.000^2\cdot deg^2\right)}$$

$$= \frac{0.180\cdot 0.0254\cdot 75.000\cdot 0.017453\cdot 60.^2 + 12.400\cdot 0.3048\cdot\cos(75.000\cdot 0.017453)}{60.^2\cdot\left(500.370 + 75.000^2\cdot 0.017453^2\right)}\ \frac{12960000.}{0.3048}\ \frac{ft}{hr^2}$$

$$= 529.838\cdot\left[\frac{ft}{hr^2}\right]$$

Example

$$E := Evals\left(\frac{2\cdot m_1\cdot m_2}{m_1 + m_2}\cdot g_e, \left[9.8\cdot\frac{m}{s^2}\ \ 17.3\cdot lb\ \ 12.4\cdot lb\right], 2, lbf\right)$$

$$E = \left[\frac{2\cdot m_1\cdot m_2\cdot g_e}{m_1 + m_2} = \frac{2\cdot 17.30\cdot lb\cdot 12.40\cdot 9.80\cdot m}{(17.30 + 12.40)\cdot s^2} = \frac{2\cdot 17.30\cdot 0.453592\cdot 12.40\cdot 9.80}{17.30 + 12.40}\ \frac{1}{4.448222}\ lbf = 14.44\ lbf\right]$$

$$\frac{2\cdot m_1\cdot m_2\cdot g_e}{m_1 + m_2} = \frac{2\cdot 17.30\cdot lb\cdot 12.40\cdot 9.80\cdot m}{(17.30 + 12.40)\cdot s^2} = \frac{2\cdot 17.30\cdot 0.453592\cdot 12.40\cdot 9.80}{17.30 + 12.40}\ \frac{1}{4.448222}\ lbf = 14.44\ lbf$$

E

Alvaro

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