Isn't TEX cool? This document shows how you can use the typographic system TEX to write stuff like: If ρ and θ are both positive, then $f(\theta) - \Gamma_\theta < f(\rho) - \Gamma_\rho$.

To write a formula, you use backslash control sequences (like `\root` and `\frac`) and various types of braces (like {}) to create formulas that are then typeset beautifully. There are many quickie guides on the net', *e.g.* `http://www-math.mit.edu/18.821/short-math-guide.pdf` & `ftp://ftp.ams.org/pub/tex/doc/amsmath/amsldoc.pdf` & `http://www.bitjungle.com/~isoent/isoent-ref.pdf`.

Here's another example:

$$r = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \qquad \text{The Quadratic Formula} \tag{1}$$

To typeset the quadratic formula (above), use this 'code:'

```
r &= \frac{-b \pm \root \of {b^2-4ac}}{2a} &\text{The Quadratic Formula}
```

To understand how that 'code' results in the typeset formula you need to know that the `\frac` control sequence takes two arguments, `\pm` inserts plus-or-minus, the '`&`' characters tell TEX where to line up the columns, `\of` is part of `\root`, *etc.*

Here are some more examples:

$$y = \begin{bmatrix} x_{00} & x_{01} & x_{02} \\ x_{10} & x_{11} & x_{12} \\ x_{20} & x_{21} & x_{22} \end{bmatrix} \qquad \text{This is an example of an array with subscripts.} \tag{2}$$

And this ia an example of '*Solve for x*:'

$$\begin{aligned} x + 3 &= 2x - 4 && \\ x + 3 + 4 &= 2x - 4 + 4 && \text{Add 4 to both sides.} \\ x + 7 &= 2x && \text{Combine like terms.} \\ x + 7 - x &= 2x - x && \text{Subtract x from both sides.} \\ 7 &= x && \text{Combine like terms.} \end{aligned}$$

Check your results...

$$\begin{aligned} (7) + 3 &= 2\,(7) - 4 && \text{Substitute 7 for x.} \\ 10 &= 14 - 4 && \text{Simplify.} \\ 10 &= 10 && \checkmark \end{aligned}$$