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This statement is false: $\sqrt{5} = \sqrt{2}$

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That is it!

What happens when we have long equations in inline math? Here is an example: $a = b = c = d = e = f = g = h = i = j = k = l = m = n = o = p = q = r = s = t = u = v = w = x = y = z$.

Here is the same in display math?

$$a = b = c = d = e = f = g = h = i = j = k = l = m = n = o = p = q = r = s = t = u = v = w = x = y = z$$

This statement is true: $\sqrt{5} \neq \sqrt{2}$ (1)

This statement is false: $\sqrt{5} = \sqrt{2}$ (2)

This is a displayed equation:

$$a = \sqrt{b + c} / \sqrt[3]{\alpha + \beta + \gamma}$$

We continue our remarks in the same paragraph.

Here is an example of the `align` environment from the `amsmath` package:

$$a = b \tag{3}$$

$$= c + d \tag{4}$$

$$= e + f + g \tag{5}$$

Here is its unnumbered companion:

$$a = b$$

$$= c + d$$

$$= e + f + g$$

Here is an example of multiple alignment points:

$$\begin{array}{lll}
 a = b & < A & \ll B \\
 = c + d & > C + D & \gg \gamma + \delta \\
 = e + f + g & &
 \end{array}$$

Conjecture:

$$\aleph_0 \equiv \aleph_1 \equiv \aleph_2 \equiv \dots \equiv \aleph_\infty$$

Another conjecture:

$$\mathcal{U}^0 \equiv \mathcal{U}^1 \equiv \mathcal{U}^2 \equiv \dots \equiv \mathcal{U}^\infty$$

This is how multiple equations should be punctuated:

$$\begin{array}{l}
 a = b, \\
 c = d, \\
 e = f, \\
 g = h.
 \end{array}$$

Here is another example that shows the absence of commas in continued right-hand sides:

$$\begin{array}{l}
 a = b \\
 = c \\
 = d, \\
 e = f, \\
 g = h.
 \end{array}$$

Here is a display decorated with right-aligned comments:

$$\begin{array}{ll}
 a = b & \textit{same as b} \\
 = c & \textit{also same as c} \\
 = d, & \textit{and d too} \\
 e = f, & \textit{same as f} \\
 g = h. & \textit{same as g}
 \end{array}$$

Here is the same display, but decorated with left-aligned comments:

$$\begin{array}{ll}
 a = b & \textit{same as b} \\
 = c & \textit{also same as c} \\
 = d, & \textit{and d too} \\
 e = f, & \textit{same as f} \\
 g = h. & \textit{same as g}
 \end{array}$$