

SELECTED EXAMPLES  
MARCH 4, 1998

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Here is **gather**

$$(1) \quad \int_0^{\infty} e^x dx = \infty$$

$$(2) \quad e^{i\pi} = -1$$

$$(3) \quad e^{2i\pi} = 1$$

$$(4) \quad \pi \approx 3.14159$$

Here is **align**

$$(5) \quad \int_0^{\infty} e^x dx = \infty$$

$$(6) \quad e^{i\pi} = -1$$

$$(7) \quad e^{2i\pi} = 1$$

$$(8) \quad \pi \approx 3.14159$$

$$(9) \quad \int_0^{\infty} e^x dx = \infty$$

Here is **multiline**

$$(10) \int_0^{\infty} e^x dx = \infty$$

$$e^{i\pi} = -\frac{12345678}{12345678}$$

$$e^{2i\pi} = 1$$

$$\pi \approx 3.14159$$

Here is **split** inside **gather**

$$(11) \int_0^{\infty} e^x dx = \infty$$

$$e^{i\pi} = -\frac{12345678}{12345678}$$

$$e^{2i\pi} = \frac{123}{123}$$

$$(12) \quad \pi \approx 3.14159$$

The integral sign ( $\int$ ) is obtained with `\int`.

Here is **gather\***

$$\int_0^{\infty} e^x dx = \infty$$

$$e^{i\pi} = -1$$

$$e^{2i\pi} = 1$$

$$\pi \approx 3.14159$$

Here is **align\***

$$\int_0^{\infty} e^x dx = \infty$$

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$$\int_0^{\infty} e^x dx = \infty$$

$$e^{i\pi} = -\frac{12345678}{12345678}$$

$$e^{2i\pi} = 1$$

$$\pi \approx 3.14159$$

Here is **split** inside **gather\***

$$\int_0^{\infty} e^x dx = \infty$$

$$e^{i\pi} = -\frac{12345678}{12345678}$$

$$e^{2i\pi} = \frac{123}{123}$$

$$\pi \approx 3.14159$$

Here is **alignat**

$$(13) \quad \int_0^\infty e^x dx = \infty \quad e^{i\pi} = -1$$

$$(14) \quad e^{2i\pi} = 1 \quad \pi \approx 3.14159$$

$$(15) \quad \int_0^\infty e^x dx = \infty e^{i\pi} = -1$$

$$(16) \quad e^{2i\pi} = 1 \quad \pi \approx 3.14159$$

Here is **xalignat**

$$(17) \quad \int_0^{\infty} e^x dx = \infty \quad e^{i\pi} = -1$$

$$(18) \quad e^{2i\pi} = 1 \quad \pi \approx 3.14159$$

$$(\pi) \quad \int_0^{\infty} e^x dx = \infty \quad e^{i\pi} = -1$$

$$e^{2i\pi} = 1 \quad \pi \approx 3.14159$$

$$1 + 1 = 2 \quad a + b = c$$

$$1 + 2 = 3 \quad \text{and} \quad a + c = d$$

$$3 = 1 + 2 \quad 3 = 1 + 2$$

$x + y + \text{some more stuff} = \text{something else}$

Definition of a function by **cases**

$$f(x) = \begin{cases} 0 & \text{if Ralph is awake} \\ 1_{\text{does it matter}} & \text{if Ralph is asleep} \end{cases}$$

And, to conclude, some mathematical operators:

Is  $\sin(x)$  the same as  $\sin(x)$ ? Is  $\log x$  the same as  $\log x$ ?

Note the difference between  $\lim_{n \rightarrow \infty} (1 + 1/n)^n = e$  and

$$\lim_{n \rightarrow \infty} (1 + 1/n)^n = e.$$