superscript:

$$2x^3$$

$$2x^{34}$$

$$2x^{x^{25}}$$

subscripts:

$$x_3$$

$$x_{34}$$

$$x_{123}$$

geek letters:

$$\pi$$

$$\alpha$$

$$A = \pi r^2$$

$$\lambda$$

$$\langle$$

trig functions:

$$y = \sin x$$

$$y = \cos x$$

$$y = \tan x$$

log functions:

$$y = \log x$$

$$y = \log_5 x$$

$$y = \ln x$$

square roots:

$$\sqrt{2}$$

$$\sqrt[3]{2}$$

$$\sqrt{x^2 + y^2}$$

$$\sqrt{1 + \sqrt{x}}$$

fractions: About 2/3 of the glass is full.
About 2/3 of the glass is full.
About $\frac{2}{3}$ of the glass is full.
About $\frac{2}{3}$ of the glass is full.

$$\frac{x}{x^2 + x + 1}$$

$$\frac{\dfrac{\sqrt{x+1}}{\sqrt{x-1}}}{\dfrac{\dfrac{1}{1+\frac{1}{x}}}{\sqrt{\dfrac{x}{x^2+x+1}}}}$$