

표준정규분포 (Standard Normal Distribution)

Standard Normal Distribution

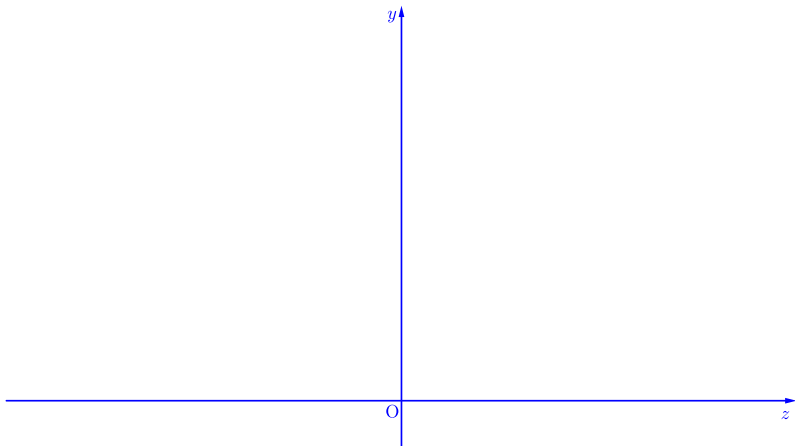
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Standard Normal Distribution

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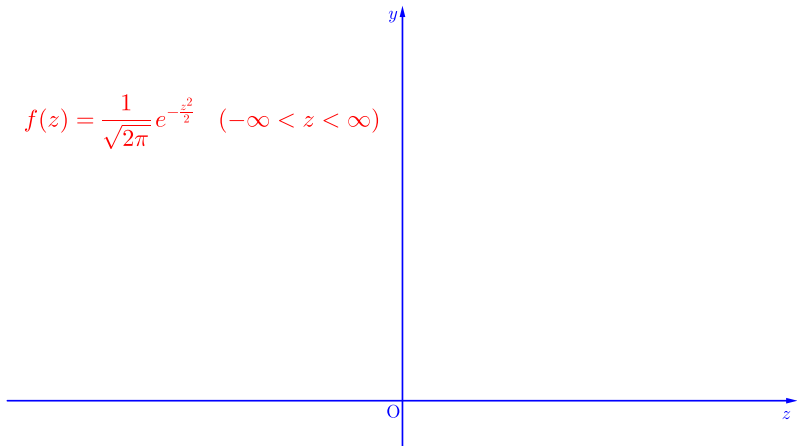


Standard Normal Distribution

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$$f(z) = \frac{1}{\sqrt{2\pi}} e^{-\frac{z^2}{2}} \quad (-\infty < z < \infty)$$

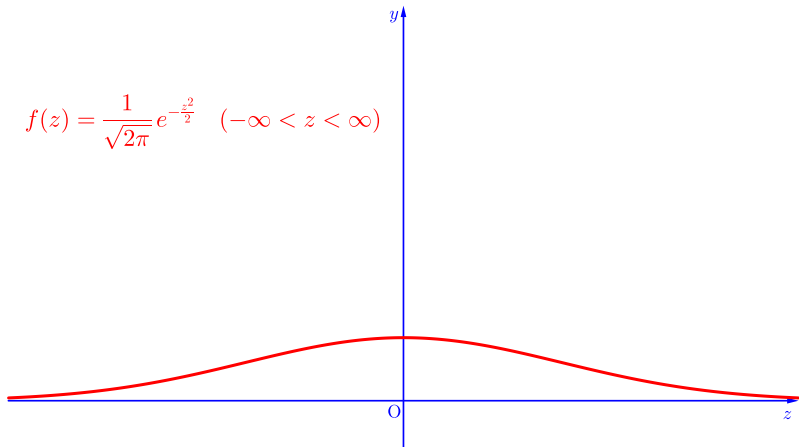


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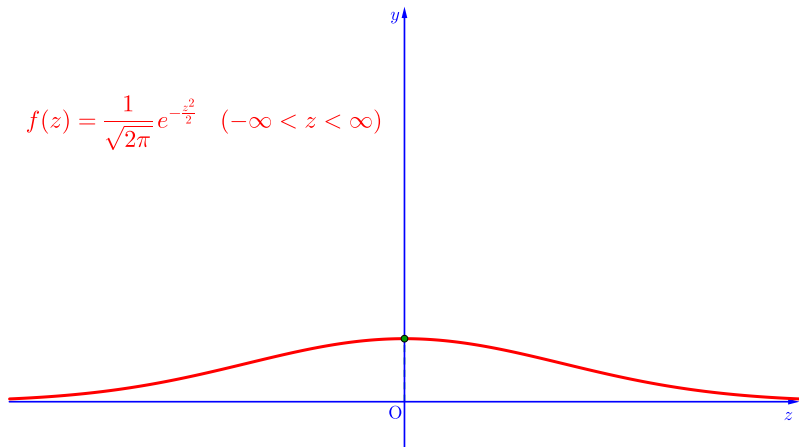


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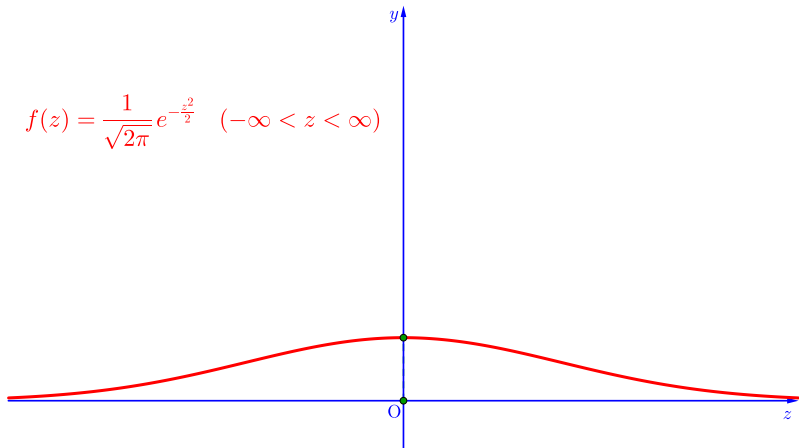


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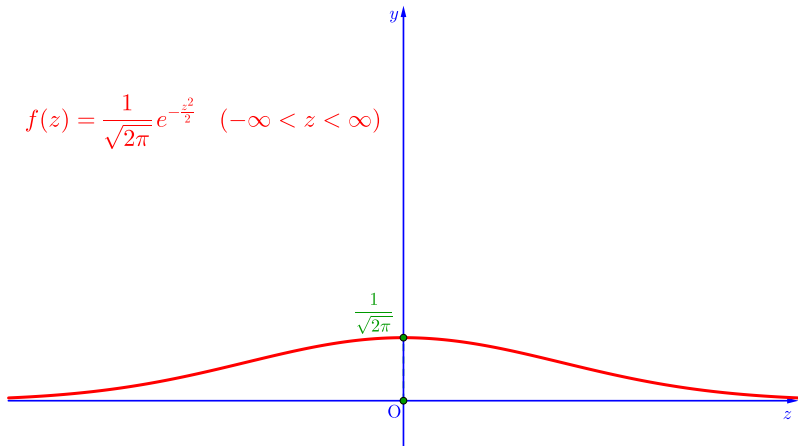


Standard Normal Distribution

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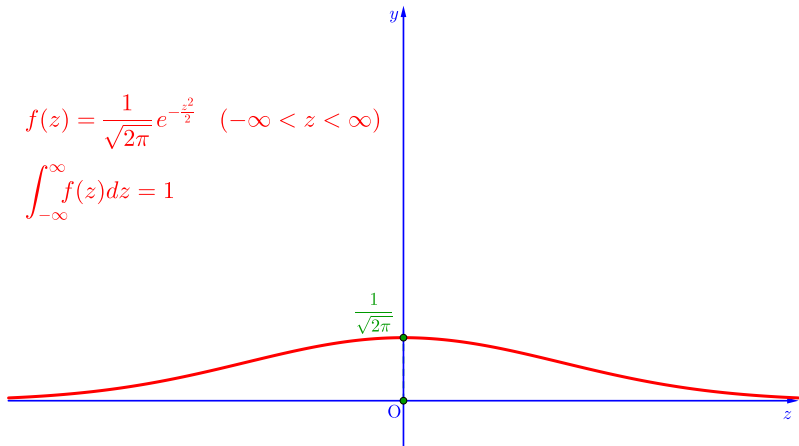
Standard Normal Distribution

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$$f(z) = \frac{1}{\sqrt{2\pi}} e^{-\frac{z^2}{2}} \quad (-\infty < z < \infty)$$

$$\int_{-\infty}^{\infty} f(z) dz = 1$$



Standard Normal Distribution

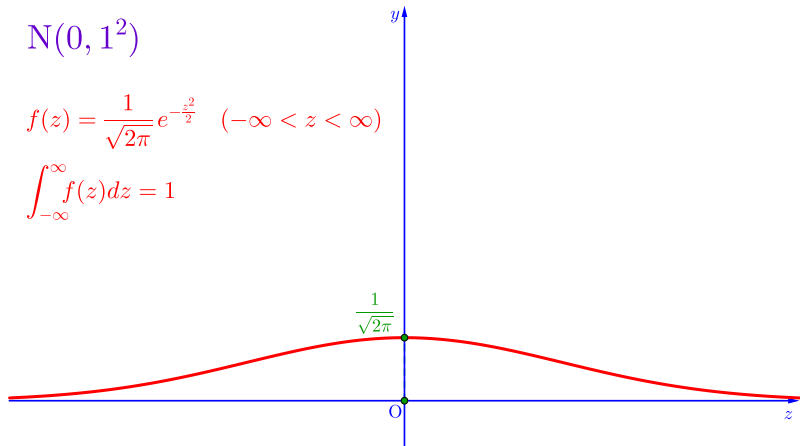
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$N(0, 1^2)$

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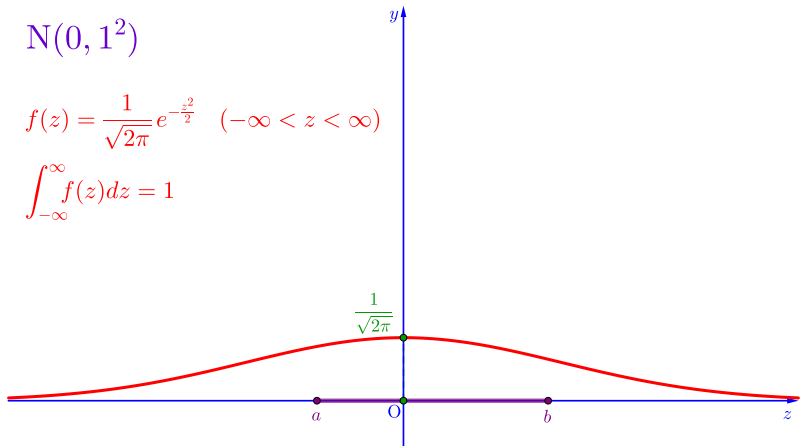
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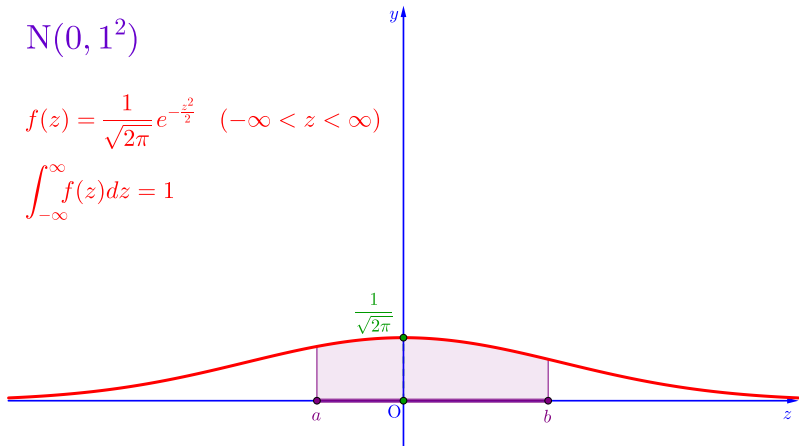
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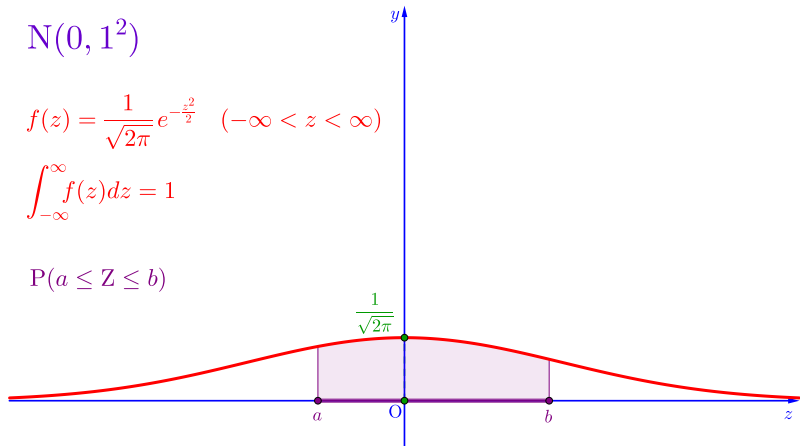
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$$P(a \leq Z \leq b)$$



Standard Normal Distribution

Start

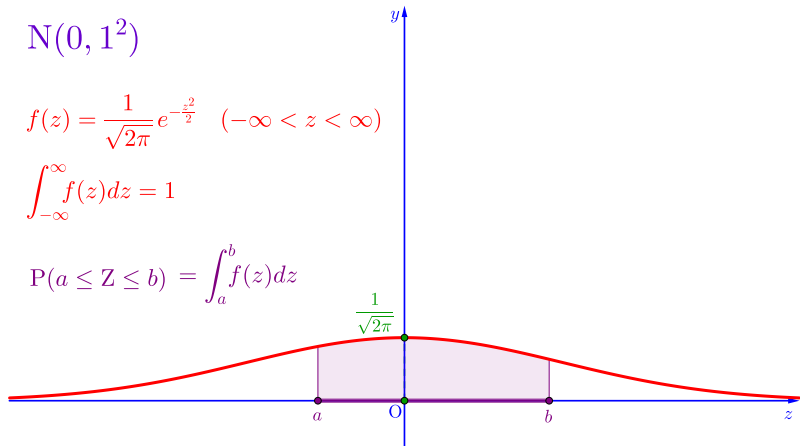
End

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$$P(a \leq Z \leq b) = \int_a^b f(z) dz$$



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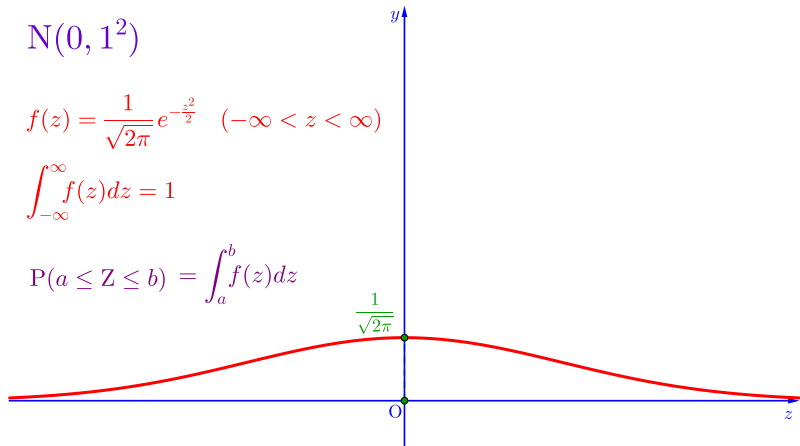
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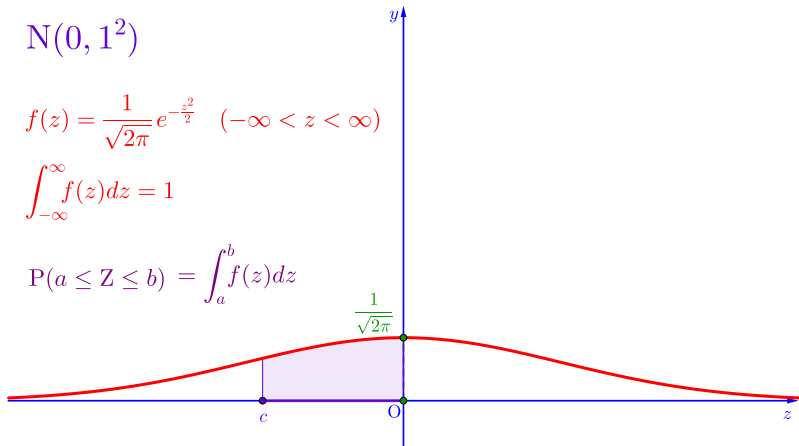
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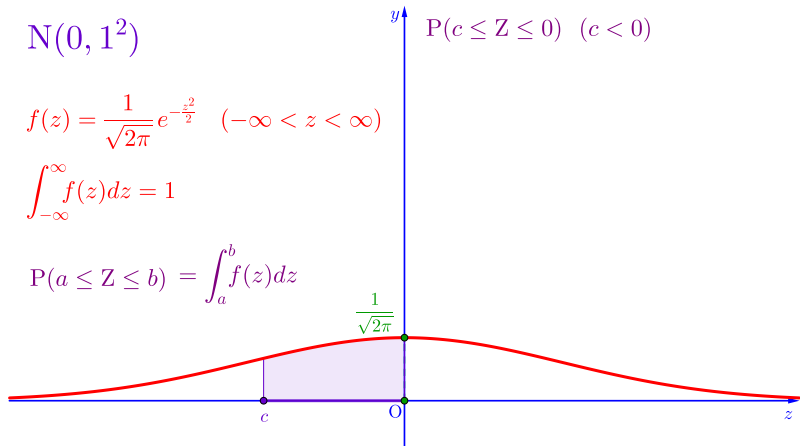
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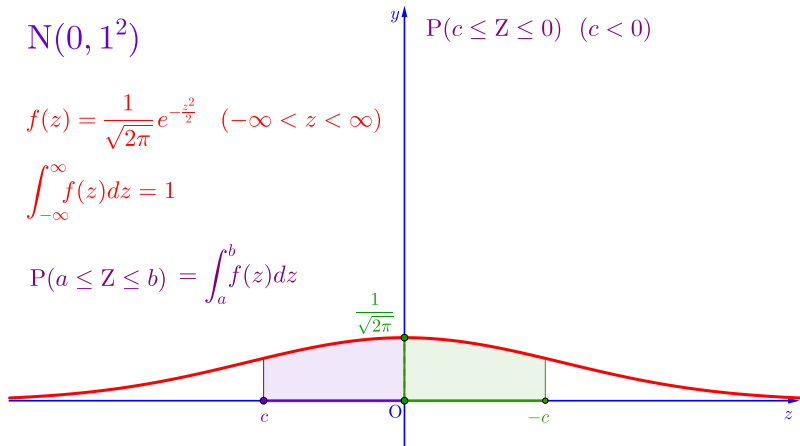
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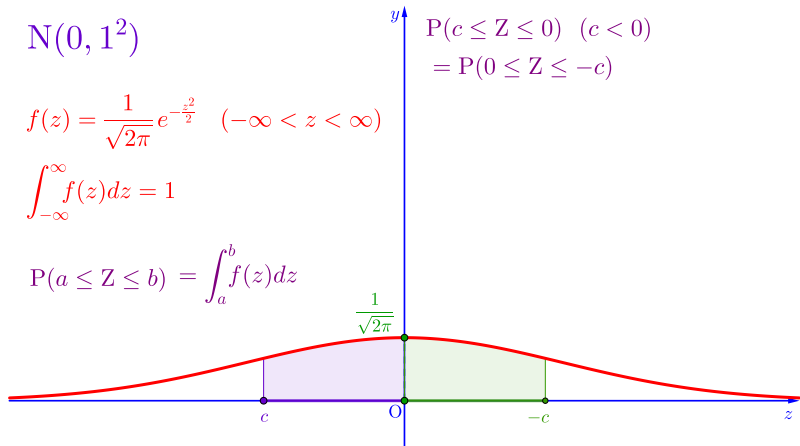
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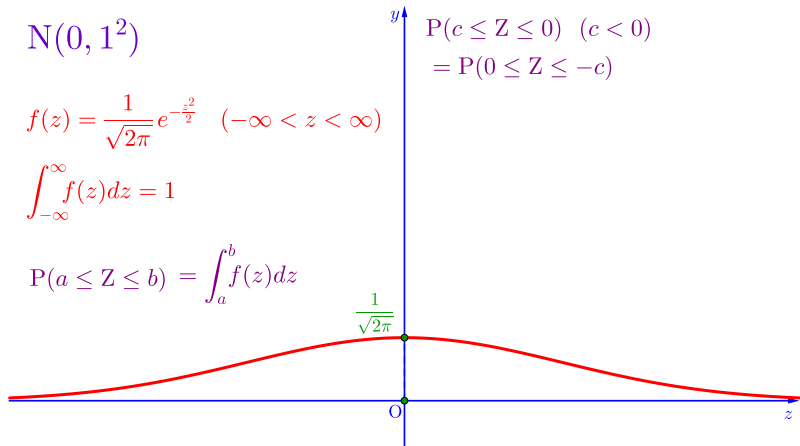
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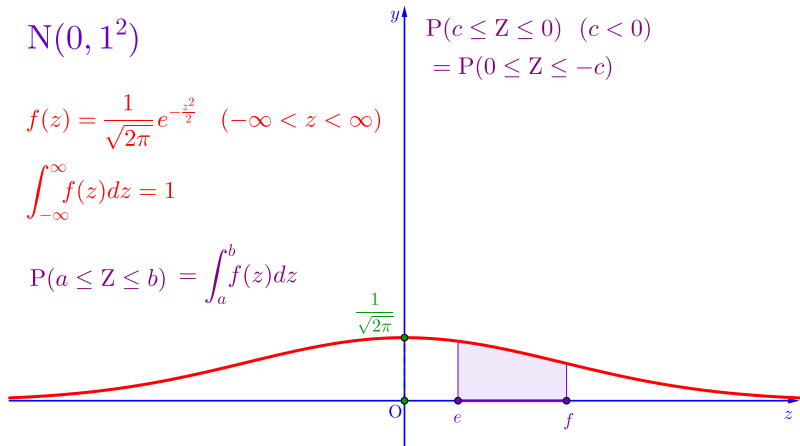
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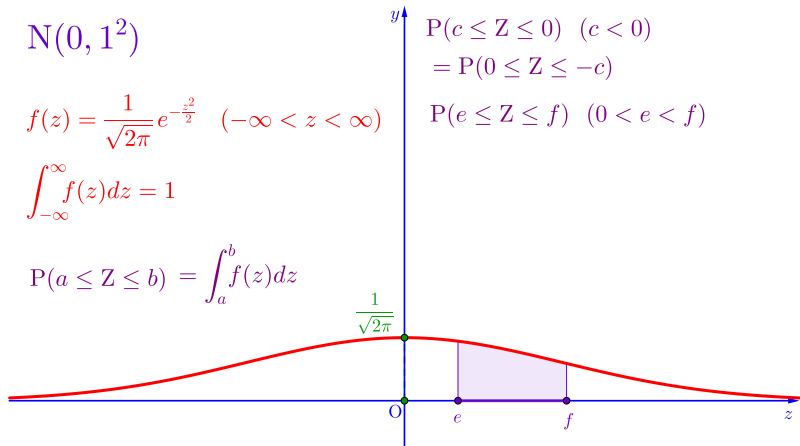
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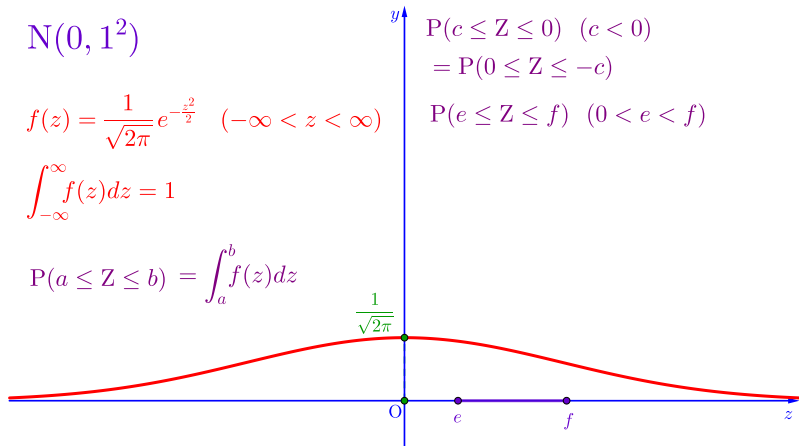
▶ End

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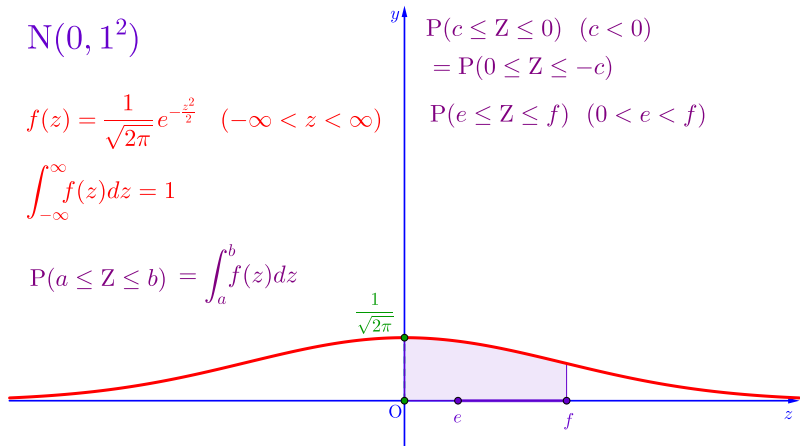
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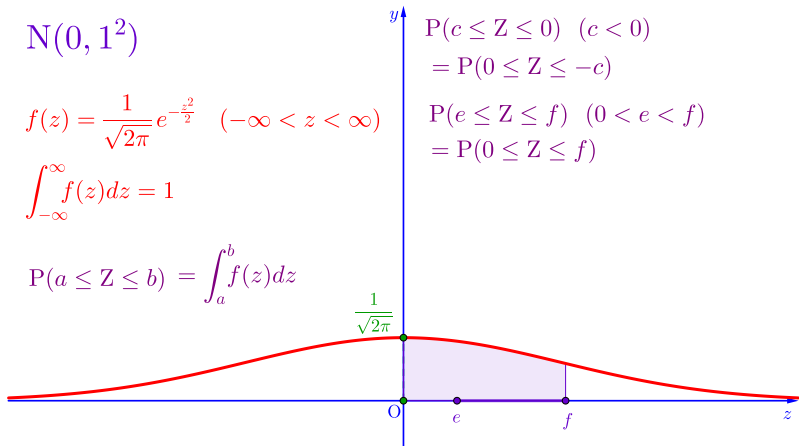
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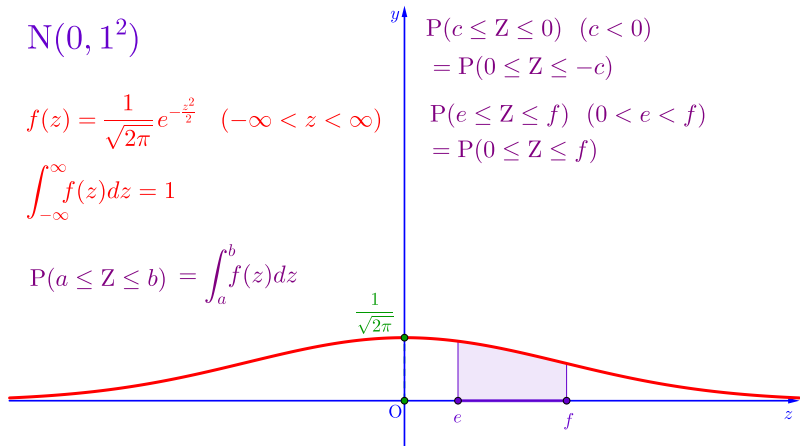
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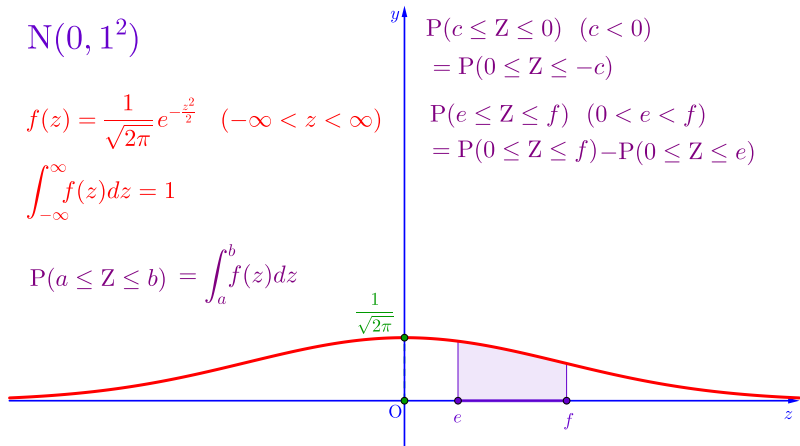
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▶ Start

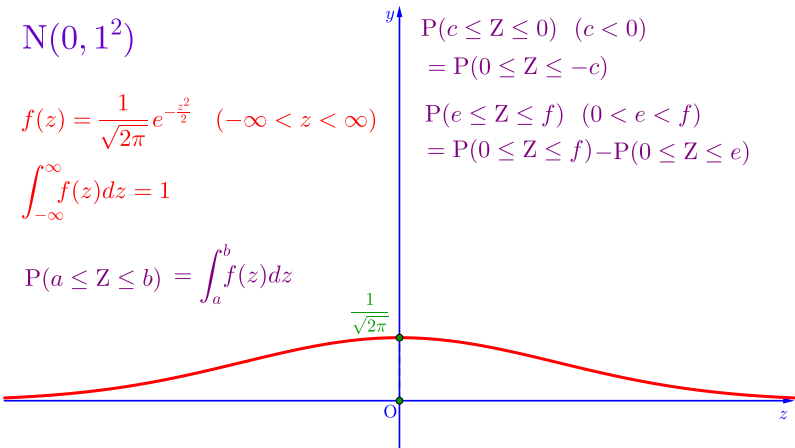
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$$N(0, 1^2)$$

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$$\int_{-\infty}^{\infty} f(z) dz = 1$$

$$P(a \leq Z \leq b) = \int_a^b f(z) dz$$



The graph shows a red bell-shaped curve centered at the origin of a coordinate system with a vertical y-axis and a horizontal z-axis. The origin is marked with a green dot and labeled 'O'. The peak of the curve is at z=0, and its height is labeled as $\frac{1}{\sqrt{2\pi}}$ in green. The curve approaches the z-axis as z goes to positive or negative infinity.

$$P(c \leq Z \leq 0) \quad (c < 0)$$
$$= P(0 \leq Z \leq -c)$$
$$P(e \leq Z \leq f) \quad (0 < e < f)$$
$$= P(0 \leq Z \leq f) - P(0 \leq Z \leq e)$$

Standard Normal Distribution

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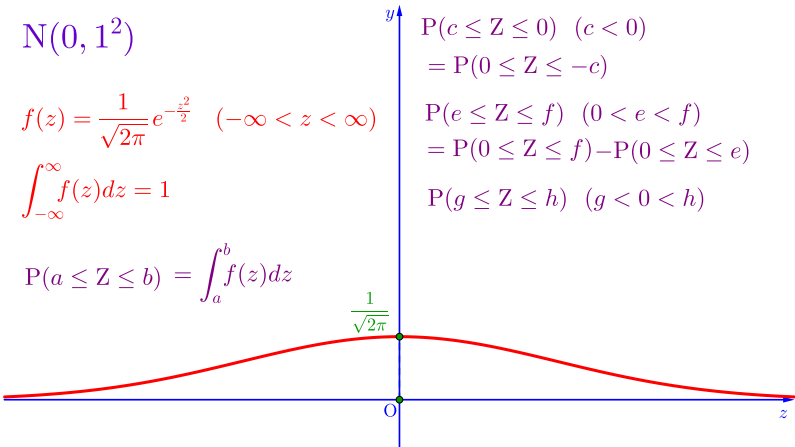
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$$N(0, 1^2)$$

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$$\int_{-\infty}^{\infty} f(z) dz = 1$$

$$P(a \leq Z \leq b) = \int_a^b f(z) dz$$



The graph shows a red bell-shaped curve centered at the origin of a coordinate system with a vertical y-axis and a horizontal z-axis. The origin is marked with a green dot and labeled 'O'. The peak of the curve is at z=0, and its height is labeled as $\frac{1}{\sqrt{2\pi}}$ in green. The curve approaches the z-axis as z goes to positive or negative infinity.

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$$= P(0 \leq Z \leq -c)$$
$$P(e \leq Z \leq f) \quad (0 < e < f)$$
$$= P(0 \leq Z \leq f) - P(0 \leq Z \leq e)$$
$$P(g \leq Z \leq h) \quad (g < 0 < h)$$

Standard Normal Distribution

▶ Start

▶ End

$$N(0, 1^2)$$

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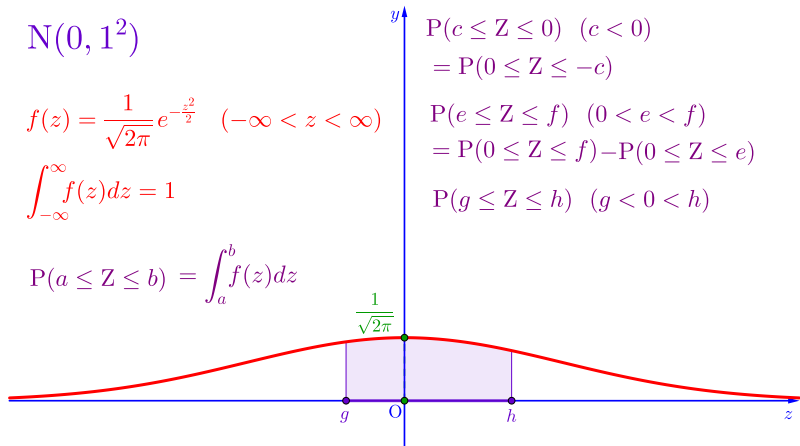
$$\int_{-\infty}^{\infty} f(z) dz = 1$$

$$P(a \leq Z \leq b) = \int_a^b f(z) dz$$

$$P(c \leq Z \leq 0) \quad (c < 0) \\ = P(0 \leq Z \leq -c)$$

$$P(e \leq Z \leq f) \quad (0 < e < f) \\ = P(0 \leq Z \leq f) - P(0 \leq Z \leq e)$$

$$P(g \leq Z \leq h) \quad (g < 0 < h)$$



Standard Normal Distribution

▶ Start

▶ End

$$N(0, 1^2)$$

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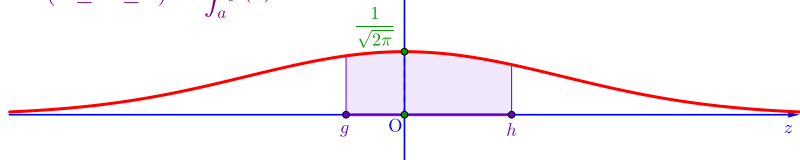
$$\int_{-\infty}^{\infty} f(z) dz = 1$$

$$P(a \leq Z \leq b) = \int_a^b f(z) dz$$

$$y$$
$$P(c \leq Z \leq 0) \quad (c < 0)$$
$$= P(0 \leq Z \leq -c)$$

$$P(e \leq Z \leq f) \quad (0 < e < f)$$
$$= P(0 \leq Z \leq f) - P(0 \leq Z \leq e)$$

$$P(g \leq Z \leq h) \quad (g < 0 < h)$$
$$= P(g \leq Z \leq 0) + P(0 \leq Z \leq h)$$



▶ Start

▶ End

$$N(0, 1^2)$$

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$$\int_{-\infty}^{\infty} f(z) dz = 1$$

$$P(a \leq Z \leq b) = \int_a^b f(z) dz$$

$$\begin{aligned} P(c \leq Z \leq 0) \quad (c < 0) \\ &= P(0 \leq Z \leq -c) \\ P(e \leq Z \leq f) \quad (0 < e < f) \\ &= P(0 \leq Z \leq f) - P(0 \leq Z \leq e) \\ P(g \leq Z \leq h) \quad (g < 0 < h) \\ &= P(g \leq Z \leq 0) + P(0 \leq Z \leq h) \\ &= P(0 \leq Z \leq -g) + P(0 \leq Z \leq h) \end{aligned}$$

Github:

<https://min7014.github.io/math20230603001.html>

Click or paste URL into the URL search bar,
and you can see a picture moving.