Difference of two Normal random variables.

If X, Y independent Normal random variables, then

$X - Y$ is a Normal random variable too (because $-Y$ is Normal)

with mean $\mu_X - \mu_Y$ and variance $\sigma_X^2 + \sigma_Y^2$.

$$P(X - Y \leq 5) = P\left(\frac{X - Y - (\mu_X - \mu_Y)}{\sqrt{\sigma_X^2 + \sigma_Y^2}} \leq \frac{5 - (\mu_X - \mu_Y)}{\sqrt{\sigma_X^2 + \sigma_Y^2}} \right)$$

E.g. If $\mu_X = 10$ $\mu_Y = 2$
$\sigma_X^2 = 7$ $\sigma_Y^2 = 12$

$$= P\left(Z \leq \frac{5 - (10 - 2)}{\sqrt{7 + 12}} \right)$$

$$= P(Z \leq -0.69)$$

$$= P(Z \geq 0.69)$$

$$= 1 - P(Z \leq 0.69)$$

$$= 1 - F_Z(0.69)$$

$$= 1 - 0.7549 = 0.2451$$