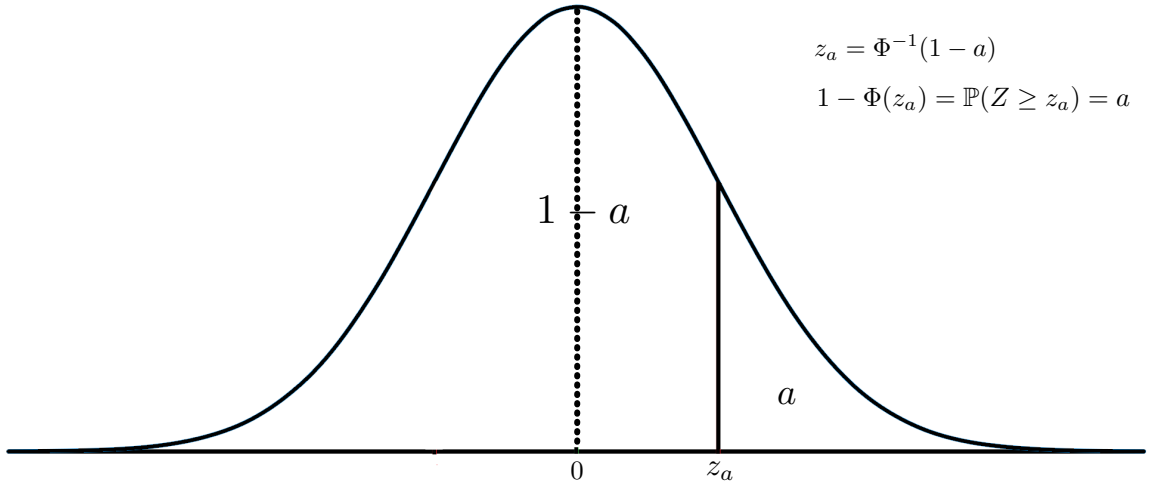
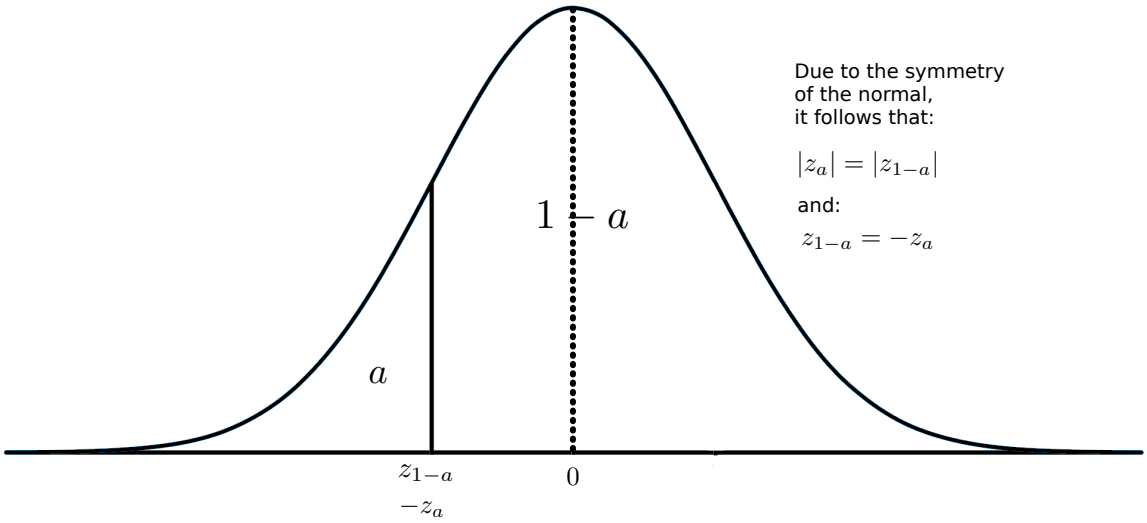


$z_a = \Phi^{-1}(1-a)$

$1 - \Phi(z_a) = \mathbb{P}(Z \geq z_a) = a$

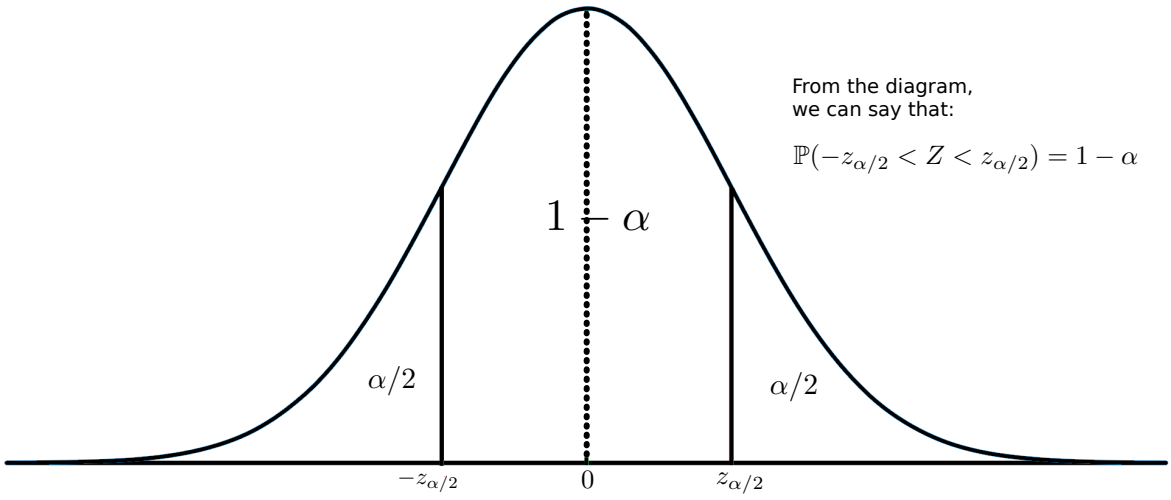


Due to the symmetry
of the normal,
it follows that:

$|z_a| = |z_{1-a}|$

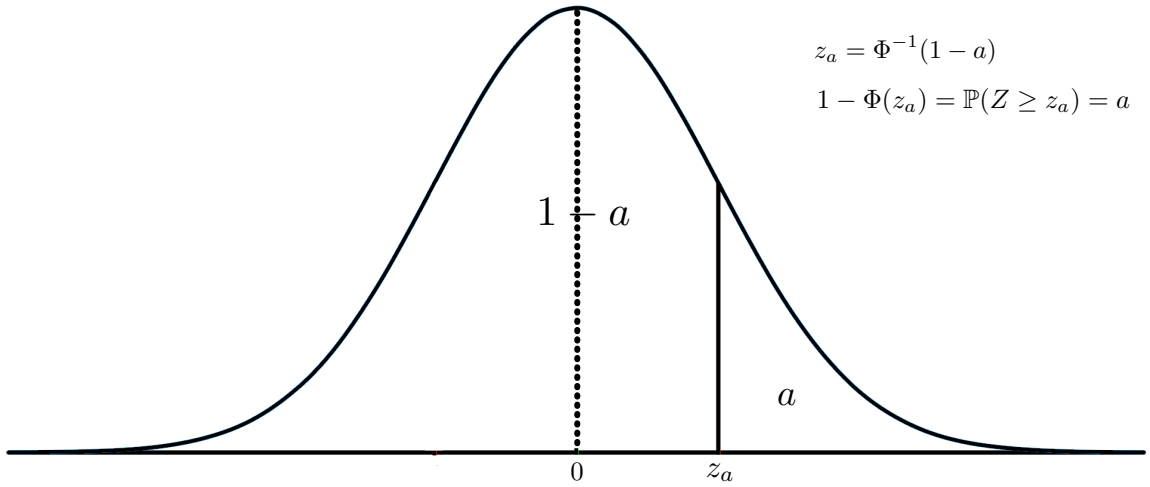
and:

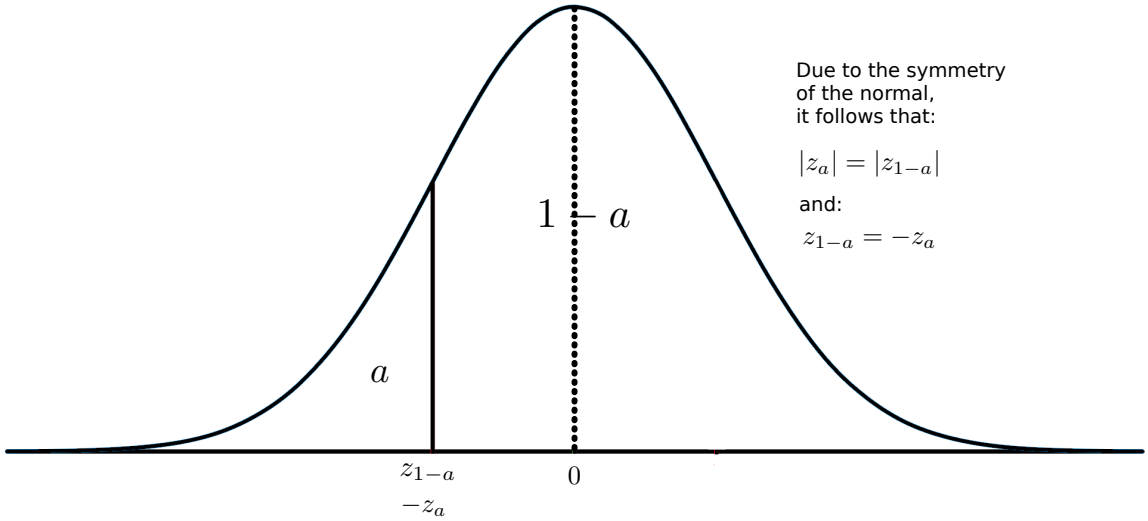
$z_{1-a} = -z_a$



From the diagram,
we can say that:

$\mathbb{P}(-z_{\alpha/2} < Z < z_{\alpha/2}) = 1-\alpha$


$z_a = \Phi^{-1}(1-a)$
$1 - \Phi(z_a) = \mathbb{P}(Z \geq z_a) = a$
$1-a$
a
0
z_a



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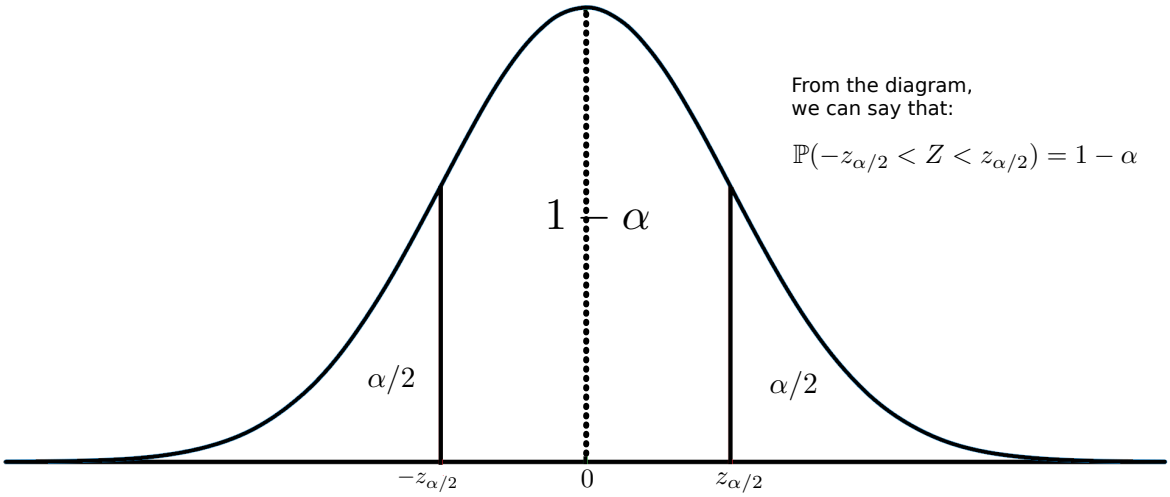
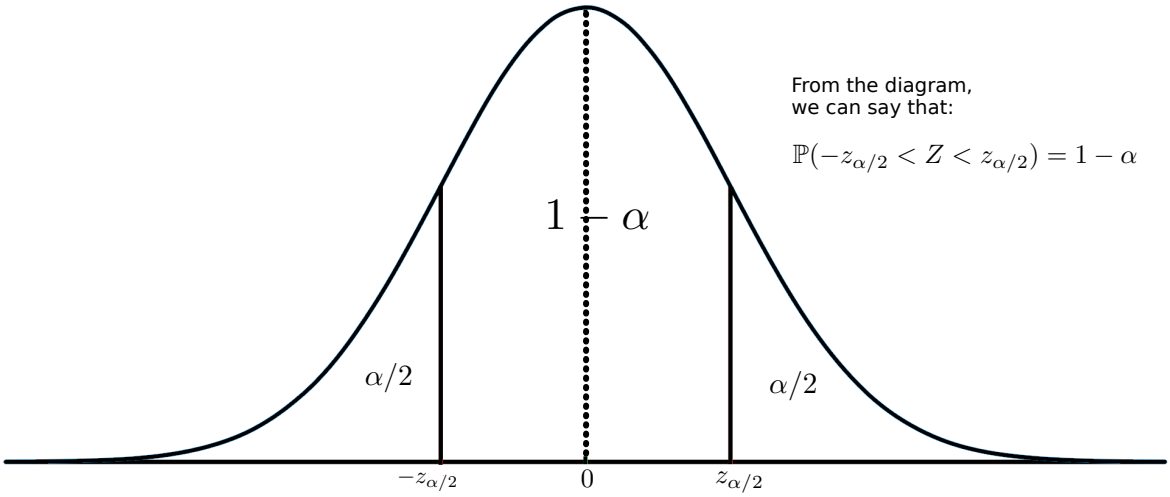


From the diagram,
we can say that:

$$\mathbb{P}(-z_{\alpha/2} < Z < z_{\alpha/2}) = 1 - \alpha$$



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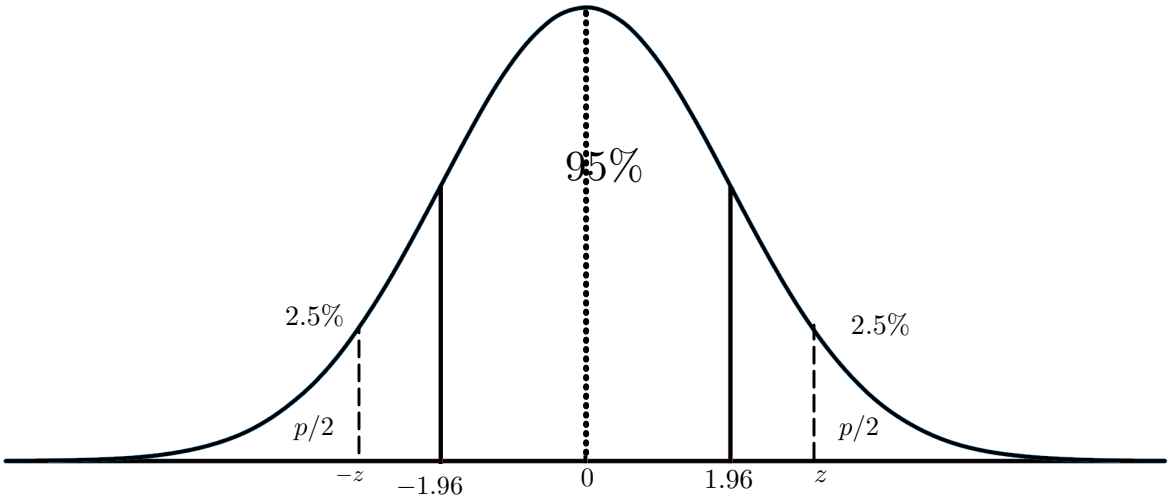
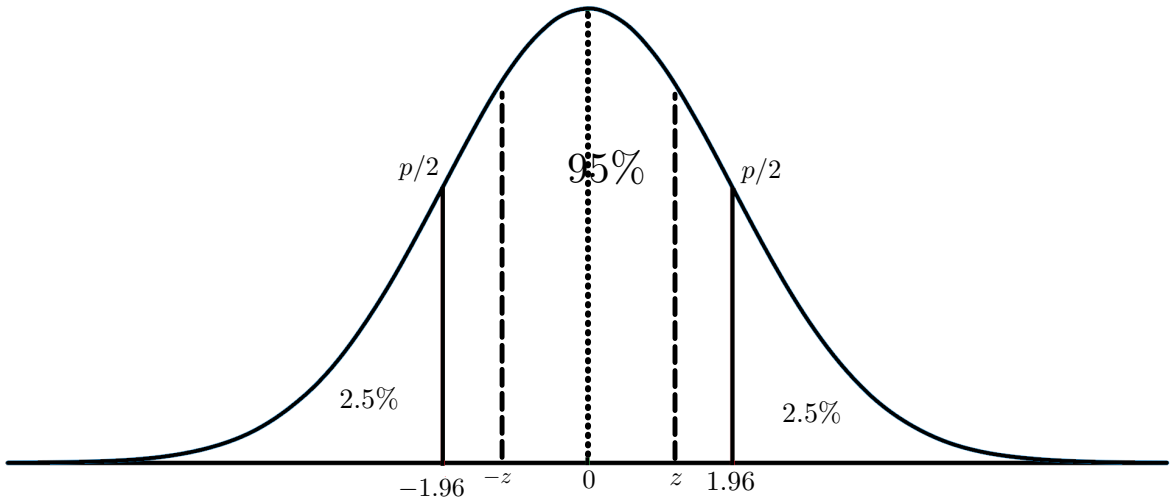

95%
2.5%
2.5%
p/2
p/2
−z
−1.96
0
1.96
z


p/2
95%
p/2
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−1.96
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0
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1.96