Factor the following:

$a^4 - 16$

Express $a^4 - 16$ as a difference of squares.

$a^4 - 16 = \left(a^2\right)^2 - 4^2:$

$\left(a^2\right)^2 - 4^2$

Factor the difference of two squares.

Factor the difference of two squares. $\left(a^2\right)^2 - 4^2 = \left(a^2 - 4\right)\left(a^2 + 4\right):$

$\left(a^2 - 4\right)\left(a^2 + 4\right)$

Write 4 as a square in order to express $a^2 - 4$ as a difference of squares.

$a^2 - 4 = a^2 - 2^2:$

$\left(a^2 - \boxed{2^2}\right)\left(a^2 + 4\right)$

Factor the difference of two squares.

Factor the difference of two squares. $a^2 - 2^2 = (a - 2)(a + 2):$

Answer:

$\boxed{(a - 2)(a + 2)}\ \left(a^2 + 4\right)$