Determine $I = \int 5dx$, given that $I = 16$ when $x = 2$.

Solution.

At first, we will find the indefinite integral:

$I = \int 5dx = 5 \int dx = 5x + C.$

We have condition that $I = 16$, when $x = 2$. Hence, we can define constant C:

$16 = 5 \cdot 2 + C,$ hence $C = 16 - 10 = 6.$

Answer:

$I = 5x + 6.$