TG   8
ADI   Given $Q(x) = \int 8x^3 \, dx$, and $Q(0) = 5$, determine $Q(x)$.

$Q(x) = \int 8x^3 \, dx$

$\quad = 2x^4 + c$

Substitute $Q(0) = 5$:

$\quad 5 = 2(0)^4 + c$

$\quad c = 5$

$\therefore Q(x) = 2x^4 + 5$