Thin Airfoil Theory Glossary

$x, \xi$ General coordinates in 2-D airfoil plane

$\xi$ Parameter along airfoil (numerically, $\xi = x$).
Also used as dummy variable of integration.

$Z(x)$ Value of $z$ on camberline at some $x$

$\frac{dZ}{dx}(x)$ Slope of camberline at some $x$

$\Theta_0$ Transformed $x$ on airfoil: $x = \frac{\xi}{2}(1 - \cos\Theta_0)$

$\Theta$ Transformed $\xi$ on airfoil: $\xi = \frac{x}{2}(1 - \cos\Theta)$

(In 18.01, $x \rightarrow \Theta_0$ and $\xi \rightarrow \Theta$ are called “trigonometric substitutions”.)

$dw(x, \xi)$ Vertical velocity at $x$, due to $d\xi$ - long piece of vortex sheet $\gamma(\xi)$

$W(x)$ Vertical velocity at $x$, due to entire vortex sheet $\gamma(\xi)$, $0 \leq \xi \leq C$

$W(x) = \int dw = \int_0^C \frac{\gamma(\xi)d\xi}{2\pi(\xi-x)}$