Area between curves

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Areas between functions

If f and g are continuous and $f(x) \geq g(x)$ for all x in $[a, b]$. Then the area A of the region bounded by the curves $y = f(x)$, $y = g(x)$, and the lines $x = a$ and $x = b$ is

$$A = \int_a^b [f(x) - g(x)]\, dx$$

More general theorem

If f and g are continuous for all x in $[a, b]$, then the area between the curves $f(x)$ and $g(x)$ and between $x = a$ and $x = b$ is

$$A = \int_a^b |f(x) - g(x)| dx$$