Math 2143 - Brief Calculus with Applications

Quiz #11 - 2013.03.05

Solutions

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1. How does one find the area under a curve $f(x)$ on an interval $[a, b]$ using antiderivatives?

   If $f(x)$ has antiderivative $F(x)$, the the area under $f(x)$ on $[a, b]$ is $F(b) - F(a)$.

2. How can you compute the area between two curves $f(x)$ and $g(x)$ on an interval $[a, b]$?

   The area between two curves $f(x)$ and $g(x)$ on the interval $[a, b]$ can be thought of as the area under $f(x)$ minus the area under $g(x)$ on the interval $[a, b]$, which is thus give by

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