Example 1. Determine the area of the region bounded above by the graph of $y = 2$ and below by the graph of $y = x^2 - 2$.

Example 2. Determine the area of the region bounded by the graphs of $y = x$ and $y = x^2$.

Date:

Area of Regions Between Two Curves

If f and g are continuous functions on $[a, b]$ and $f(x) \geq g(x)$ on $[a, b]$, then the area of the region between the two curves on $[a, b]$ is

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Example 3. Determine the area of the region bounded by the graphs of $y = x^3$, $y = 2x + 4$, and $y = 0$.

Method 1:

Method 2:

Example 4. Determine the area of the region bounded by the graphs of $y = \ln x + 1$, $y = 5$, $y = 1$, and $x = 0$.