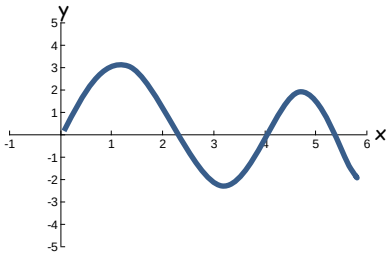
Notes: Area Between 2 Curves
2

Application of Integration Day

■ In the past we have found the area between the curve & the x-axis



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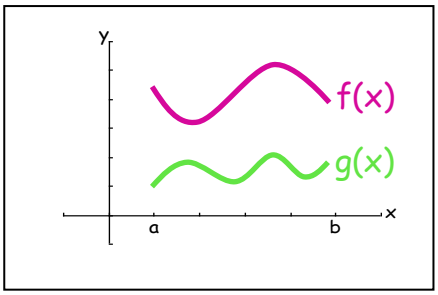
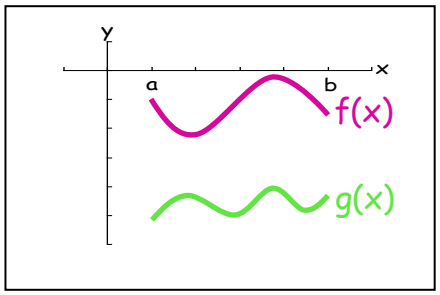
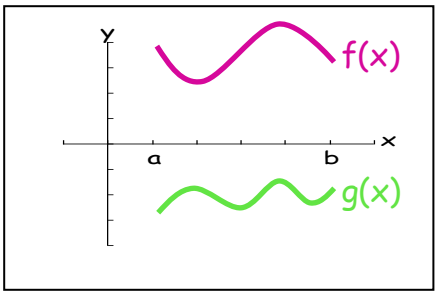
■ Today we are find the area bounded between 2 functions.





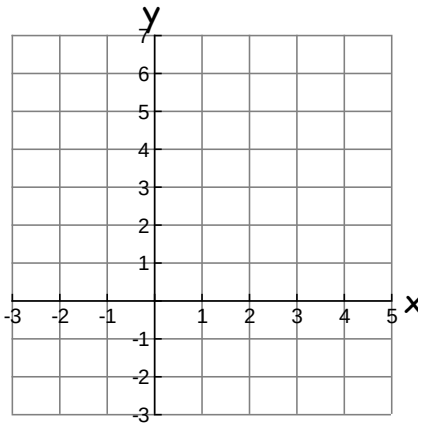


■ If you get _____ are, then you did _____.

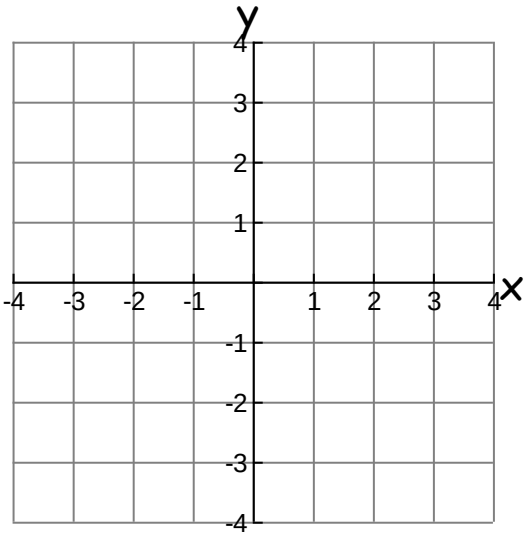
AI-2

How do you find the area bounded by two curves?

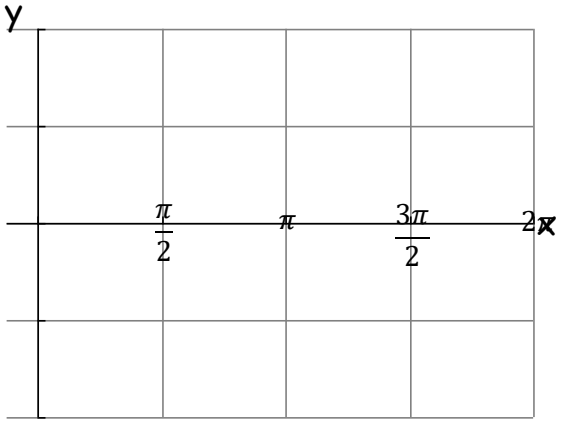
Example 1: Find the area of the region bounded by the graphs $y = x^2 + 2$, $y = -x$, $x = 0$, and $x = 2$.



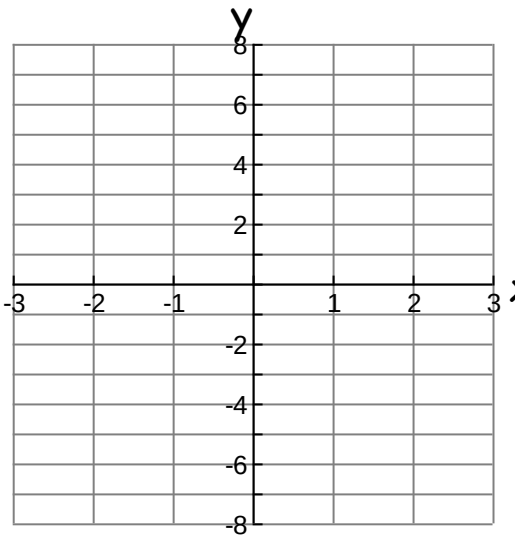
Example 2: Find the area of the region bounded by the graphs of $f(x) = 2 - x^2$ and $g(x) = x$



Example 3: Find the area of the region bounded by the graphs of $f(x) = cosx$ and $g(x) = sinx$ on the interval $\left[0, \frac{3\pi}{2}\right]$



Example 4: Find the area of the region bounded by the functions $f(x) = 3x^3 - x^2 - 10x$ and $g(x) = -x^2 + 2x$.



Sometimes you just can't do top minus bottom.

AI-3

How do you find the area when top-bottom will not work?

Example 5: Find the area of the region bounded by $x = 3 - y^2$ and $x = y + 1$