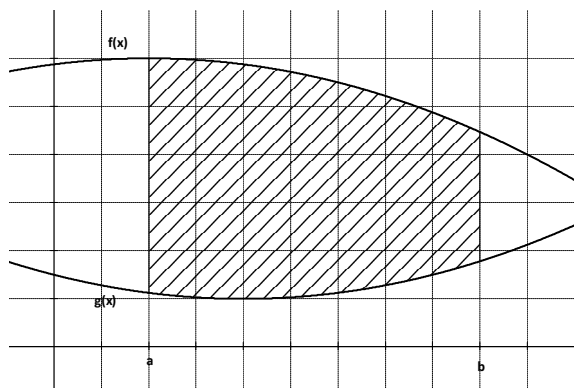


Unit 6: Applications of Integration
6.3 Area Between Curves



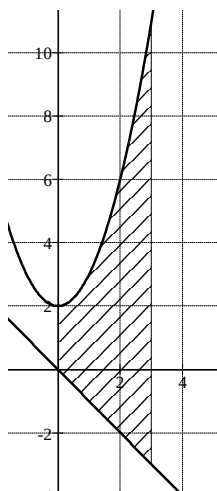
Area = area under f – area under g

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

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

* $f(x) \geq g(x)$ for all x in $[a, b]$

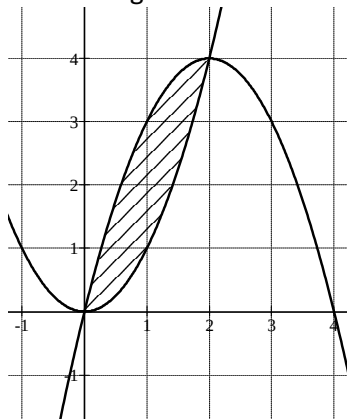
ex. Find the area of the region bounded by $y = x^2 + 2$, $y = -x$, $x = 0$, and $x = 3$.



Which function is greater on the interval? – check with calc. or sub in a value in the interval.

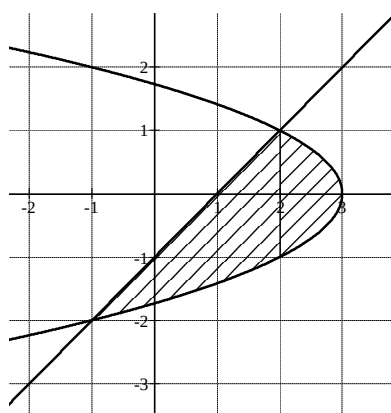
ex. Find the area between $y = x^2$ and $y = -x^2 + 4x$.

*no bounds given thus it is assumed the intersections of the functions are the bounds



ex. Find the area between $x = 3 - y^2$ and $y = x - 1$.

*There is no single region between the curves with respect to x (horizontally) but there is a single region between the curves with respect to y (vertically). Thus we will integrate with respect to y .



Practice Questions

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