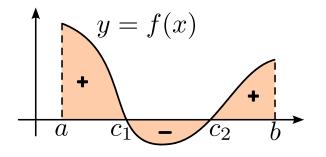
# Integration: Applications Introduction to Engineering Mathematics

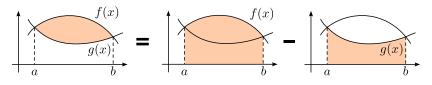
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#### Reminder: area under the curve



$${\rm Area} = \int_a^{c_1} f(x) dx - \int_{c_1}^{c_2} f(x) dx + \int_{c_2}^b f(x) dx.$$

#### Area between two curves



# Recipe for finding the area

- Make a figure
- 2 Determine intersection points
- 3 Figure out which curve is upper/lower
- 4 Integrate

## Example

Find the area bounded by  $y = \sin x$ , y = 0, and  $x = \frac{3\pi}{2}$ .

#### Example

Find the area of the region between the curves  $y=x^2-2x$  and  $y=4-x^2.$ 

## Example

Find the area of the region between  $x=12-y^2$  and y=-x.