

$x^2$  is convex, as is the absolute value function  $g(x) = |x|$ . However, the sine function (pictured) is non-convex on the interval  $(0, \pi)$ .

==== Additive optimization problems =====

In many optimization problems, the objective function  $f$  is separable: that is,  $f$  is the sum of many summand functions, each of which has its own argument: