



x		$\frac{23}{2}$	
P'	+	ϕ	-
P			

So we got $x = 23/2$ is a local maximum of $P(x)$, as desired which gives us an absolute maximum for P at $x = 23/2$ by the theorem. Hence, the two numbers we are looking for are $x = \frac{23}{2}$ and $y = 23 - \frac{23}{2} = \frac{23}{2}$.

Handy rule of thumb More often than not, if you are asked to optimize area (with fixed perimeter) or volume (with fixed surface area), you'll be working on a closed interval. If you are asked to optimize perimeter (with fixed area) or surface area (with fixed volume), you are probably working on an open interval.

Example A cylindrical can is to be made to hold a 1 liter of oil. Find the dimensions that will minimize the cost of the metal to manufacture the can.

We are asked to minimize the dimensions, this means in a way you are asked to minimize the surface area of the can. And here is a picture of this can with radius r and height h

