

- 1) Compute the minimum possible value of the following functional $J(y)$. [100 pts]

$$J(y) = \int_0^1 (1 + y'^2)^4 dx$$

$$y(0) = 0$$

$$y(1) = 1$$

Hint: Since $1 + y'^2$ is always positive, solve an easier $J(y)$ giving an identical $y(x)$.