$${\rm calculate}$$

$$\sum_{n=1}^{\infty} \frac{1}{n^2}$$

$$\sum_{n=1}^{\infty} \frac{1}{n^4}$$

 $\quad \text{and} \quad$ 

$$\sum_{n=1}^{\infty} \frac{1}{n^4}$$

hint: Fourier series of  $f(x) = (\pi - |x|)^2$  are helpfull