Suppose the random variable X is normally distributed with mean μ and standard deviation σ, i.e. $X \sim N(\mu, \sigma^2)$. Show that the p.d.f. of X has an absolute maximum at $x = \mu$ and its points of inflection occur at $x = \mu \pm \sigma$. You must clearly justify your answers. It will not suffice to only set derivatives equal to zero and solve. You must justify why you have extrema and inflection points.