$$f(x)=\frac{1}{\sigma\sqrt{2\pi}}\exp\left[-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2\right]$$

$$\frac{\mathrm{d}\,f(x)}{\mathrm{d}\,x}=\frac{1}{\sigma\sqrt{2\pi}}\left(-\frac{1}{2}\right)2\left(\frac{x-\mu}{\sigma}\right)\frac{1}{\sigma}\exp\left[-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2\right]=$$

$$=-\frac{1}{\sigma}\frac{x-\mu}{\sigma}f(x)$$

$$\frac{\mathrm{d}\,f(x)}{\mathrm{d}\,x}=-\frac{1}{\sigma}\frac{x-\mu}{\sigma}f(x)$$

$$-\sigma\frac{\mathrm{d}}{\mathrm{d}\,x}\left[\frac{\mathrm{d}\,f(x)}{\mathrm{d}\,x}\right]=\frac{\mathrm{d}}{\mathrm{d}\,x}\left[\frac{x-\mu}{\sigma}f(x)\right]=$$

$$=\frac{1}{\sigma}f(x)-\frac{1}{\sigma}\frac{x-\mu}{\sigma}\left[\frac{x-\mu}{\sigma}f(x)\right]=0$$

$$\frac{1}{\sigma}f(x)-\frac{1}{\sigma}\frac{x-\mu}{\sigma}\left[\frac{x-\mu}{\sigma}f(x)\right]=0$$

$$\left(\frac{x-\mu}{\sigma}\right)^2=1$$

$$\frac{x-\mu}{\sigma}=\pm1$$

$$x_{\text{inflect}}=\mu\pm\sigma$$

And remember $R\cong 6\ \sigma$