Q1. Find $f\ '(1)$ if $f =\begin{cases} x \cdot e^{x} & ,x <1 \\ \dfrac{e}{x} & ,x \geq 1 \end{cases}$.

Q3. Find the equation of the normal line to $y = x^{2} +1$ that is parallel to $x + y = 4$

Q1. $\lim\limits_{x \to \frac{\pi}{2}} \dfrac{\sin x - 1}{2x - \pi}$ represents the derivative of some function, f, at some point, a. **Find** f and a

Q3. Find the equation of the tangent line to $y = 2\dfrac{x}{e^x} + 1$ at $x = 0$