

2. $f(x) = \frac{2x-1}{e^x}$

~~$f'(x) = \frac{2 \cdot (2x-1) + (2x)}{e^{2x}}$~~

$f'(x) = \frac{2 \cdot e^x + (2x-1) \cdot e^x}{(e^x)^2}$

$0 = \frac{2x-1}{e^x} \cdot e^x$

$0 \cdot e^x = \frac{(2x-1)e^x}{e^x}$

$0 = 2x-1$

$2x = 1$
 $x = \frac{1}{2}$

~~$x = \frac{2x-1}{e^x}$~~

$f(0) = \frac{2x-1}{e^x}$

$\frac{f(0)}{e^0} = \frac{2 \cdot 0 - 1}{1} = -\frac{1}{1} = -1$

EXSTREM
 $0 = \frac{2 \cdot e^x + (2x-1) \cdot e^x}{(e^x)^2}$

$0 = 2e^x + (2x-1) \cdot e^x$

$0 = 2e^x + 2e^x x - e^x$

$0 = 2e^x - e^x + 2e^x x$
 $0 = e^x + 2e^x x$

~~$0 = e^x + 2e^x x$~~
 $f(0) = \frac{2 \cdot e^0 + (2 \cdot 0 - 1) \cdot e^0}{(e^0)^2}$

$f(0) = \frac{2 \cdot 1 + (-1) \cdot 1}{1}$

$f(0) = 2 - 1 \cdot 1$

$f(0) = 1$

$\lim_{x \rightarrow 0} \frac{2}{e^x} = \frac{2}{e^x} = \frac{0}{0} = 0$

e) $T(\frac{1}{2}, f(\frac{1}{2})) = (\frac{1}{2}, 0)$

$f(\frac{1}{2}) = \frac{2x-1}{e^x}$
 $f(\frac{1}{2}) = \frac{2 \cdot (\frac{1}{2}) - 1}{e^{\frac{1}{2}}}$

$f(\frac{1}{2}) = \frac{2 - 1}{e^{\frac{1}{2}}}$

$f(\frac{1}{2}) = \frac{1-1=0}{e^{\frac{1}{2}}}$