26. Mean Value Theorem

1b)

$$m = \frac{\ln 2 - \ln 1}{2-1} = \ln 2$$

$$f'(x) = \frac{1}{x}$$

$$f'(c) = \ln 2 \Rightarrow \frac{1}{c} = \ln 2 \Rightarrow \boxed{c = \frac{1}{\ln 2}}$$

2b)

$$1 + \frac{x}{2} - \sqrt{1+x} > 0 \text{ for all } x \neq 0$$

$$= 0 \text{ for } x = 0$$

5a)
5b)
6a)
6b)

} redundant proofs