3. B.

$$f(x) = f(0) + f'(0)(x-0) + \frac{f''(0)}{2}(x-0)^2$$

$$\epsilon = f(0) + f'(0)(x-0) + \frac{f''(0)}{2}(x-0)^2$$

$$\epsilon = f'(0)(x-0) + \frac{f''(0)}{2}(x-0)^2$$

$$\hat{x} = \frac{1}{f'(0)}\epsilon + O(\epsilon^2)$$

C. $\because f'(0) = 0 \quad f''(0) \neq 0$

$$\therefore \epsilon = 0(x-0) + \frac{f''(0)}{2}(x)^2$$

$$\hat{x} = \left(\frac{2}{f''(0)}\right)^{\frac{1}{2}}\epsilon^{\frac{1}{2}} + O(\epsilon)$$