3. Given, $f\left(\frac{1}{n}\right) = \frac{n^2}{n^2+1}$.

Given twice diff, So, $f\left(\frac{1}{n}\right) = 1 - \frac{1}{n^2+1}$

$$f'\left(\frac{1}{n}\right) \times \left(\frac{-1}{n^2}\right) = \frac{+1}{(n^2+1)^2}(2n)$$

$$f'\left(\frac{1}{n}\right) = \frac{-2n^3}{(n^2+1)^2}$$

$$f''\left(\frac{1}{n}\right)\left(\frac{-1}{n^2}\right) = \frac{(n^2+1)^2(-6n^2) - (-2n^3)(2)(n^2+1)(2n)}{(n^2+1)^4}$$

$$f''\left(\frac{1}{n}\right) = \left(\frac{(-6n^2)(n^2+1) + 8n^4}{(n^2+1)^3}\right)(-n^2)$$

$$\underset{n\to\infty}{Lt} f''\left(\frac{1}{n}\right) = -\left(\frac{2n^4-6n^2}{(n^2+1)^3}(n^2)\right) = -\left(\frac{\left(2-\frac{6}{n^2}\right)}{\left(1+\frac{1}{n^2}\right)^3}\right)$$

$$= -2.$$

$$\boxed{\therefore \lim_{n\to\infty}\left|f''\left(\frac{1}{n}\right)\right| = 2} \Rightarrow \text{So, } |f''(0)| = 2.$$