

$$\textcircled{5} \exists N \in \mathbb{N} \forall n \in \mathbb{N}, n > N : \frac{21n^4 - 2n^3 + 7n^2 - 10n + 7}{3n^3 + n^2 - 40n + 96} > 2022$$

↓  
NRK

$$\frac{21n^4 - 2n^3 + 7n^2 - 10n + 7}{3n^3 + n^2 - 40n + 96} > \frac{21n^4 - 2n^3 - 10n}{3n^3 + n^2 + 96n^3} > \frac{21n^4 - (2n^3 + 10n^3)}{100n^3} = \frac{21n^4 - 12n^3}{100n^3} = \frac{n^4 + 20n^4 - 12n^3}{100n^3} = \frac{n^4 + n^3(20 - 12)}{100n^3} > \frac{n^4}{100n^3}$$

$$n > \frac{3}{5} \Rightarrow \frac{n^4}{100n^3} > 2022$$

$$\frac{n}{100} > 2022$$

$$n > 202200$$

$$b) \forall N \in \mathbb{N} \exists n \in \mathbb{N}, n > N : \frac{21n^4 - 2n^3 + 7n^2 - 10n + 7}{3n^3 + n^2 - 40n + 96} \leq 2022$$