Question

Which of the following inequalities is valid for all $x \geq 1$?

A. $\dfrac{x\,(2-\sin x)}{1+x^3} \leq \dfrac{3x}{1+x^3} \leq \dfrac{3}{x^2}$

B. $\dfrac{x\,(2-\sin x)}{1+x^3} \leq \dfrac{3}{x^2} \leq \dfrac{3x}{1+x^3}$

C. $\dfrac{3}{x^2} \leq \dfrac{x\,(2-\sin x)}{1+x^3} \leq \dfrac{3x}{1+x^3}$

D. $\dfrac{3x}{1+x^2} \leq \dfrac{x\,(2-\sin x)}{1+x^3} \leq \dfrac{3}{x^2}$