$$
\begin{aligned}
&\lim_{x\to 0} \ln\left(\left(1-\sin\left(2x^2\right)\right)^{\frac{1}{x^2}}\right) \\
&= \lim_{x\to 0} \frac{\ln\left(1-\sin\left(2x^2\right)\right)}{x^2} \\
&= \lim_{x\to 0} \frac{-\sin\left(2x^2\right)}{x^2} \\
&= \lim_{x\to 0} \frac{-2x^2}{x^2} = -2
\end{aligned}
$$

$$
\therefore \lim_{x\to 0} \left(1-\sin\left(2x^2\right)\right)^{\frac{1}{x^2}} = e^{-2}
$$