$$egin{aligned} &\lim_{x o 0} \ln\left(\left(1-\sin\left(2x^2
ight)
ight)^{rac{1}{x^2}}
ight) \ &=\lim_{x o 0} rac{\ln\left(1-\sin\left(2x^2
ight)
ight)}{x^2} \ &=\lim_{x o 0} rac{-\sin\left(2x^2
ight)}{x^2} \ &=\lim_{x o 0} rac{-2x^2}{x^2} = -2 \end{aligned}$$

$$\lim_{x o 0} \left(1-\sin\left(2x^2
ight)
ight)^{rac{1}{x^2}} = e^{-2}$$