$$\sum_{n=1}^{\infty} \sin\left(\pi\sqrt{n^2+k^2}\right)$$

$$\sqrt{n^2+k^2} - n = \frac{k^2}{\sqrt{n^2+k^2}+n} \longrightarrow 0$$

per $n \to +\infty$

$$\sin\left(\pi\sqrt{n^2+k^2}\right) - \sin(n\pi)$$

$$(-1)^n \sin\left(\pi\left(\sqrt{n^2+k^2} - n\right)\right) = (-1)^n \sin\left(\pi\sqrt{n^2+k^2}\right)$$

$$\sum_{n=1}^{\infty} \frac{k^2}{\sqrt{n^2+k^2}+n} = +\infty$$