KRÖNECKER DELTA DRILL

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Evaluate the following expressions:

a. $\sum_{n=0}^{\infty} \delta_{n,2} = ?$ **b.** $\sum_{n=0}^{\infty} n\,\delta_{n,2} = ?$ **c.** $\sum_{n=-\infty}^{\infty} n^2\,\delta_{n,2} = ?$

d. $\sum_{n=4}^{10} \delta_{n,2} = ?$ **e.** $\sum_{n=-\infty}^{\infty} \delta_{n^2,2} = ?$ **f.** $\sum_{n=-\infty}^{\infty} n^2\,\delta_{n^2,2} = ?$

g. $\sum_{n=-\infty}^{\infty} \delta_{n^2,4} = ?$ **h.** $\sum_{n=-\infty}^{\infty} n\delta_{n^2,4} = ?$ **i.** $\sum_{n=-\infty}^{\infty} n^2\delta_{n^2,4} = ?$

j. $\sum_{n=1}^{\infty} n\sin\left(\frac{n\pi}{2}\right)\delta_{n,1} = ?$ **k.** $\sum_{n=1}^{\infty} n\sin\left(\frac{n\pi}{2}\right)\delta_{n,2} = ?$ **l.** $\sum_{n=1}^{\infty} n\sin\left(\frac{n\pi}{2}\right)\delta_{n,3} = ?$

Write the following series in the sigma notation. You need not evaluate the sums.

example: $1 + 1/3 + 1/9 + 1/27 + \ldots = \sum_{n=0}^{\infty} \frac{1}{3^n}$

m. $1 - 1/3 + 1/9 - 1/27 + \ldots = ?$

n. $1 - 1/k + 1/k^2 - 1/k^3 + \ldots = ?$

o. $1/k - 1/k^2 + 1/k^3 - 1/k^4 + \ldots = ?$

p. $1 - \frac{1}{2}\cos 2\theta + \frac{1}{4}\cos 4\theta - \frac{1}{6}\cos 6\theta + \ldots = ?$

q. $\sin\theta - \frac{1}{3}\sin 3\theta + \frac{1}{5}\sin 5\theta - \frac{1}{7}\sin 7\theta + \ldots = ?$

r. $1 - \frac{1}{2}\cos\theta + \frac{1}{4}\cos 2\theta - \frac{1}{8}\cos 3\theta + \ldots = ?$

Can you write **p** and **q** without using the notation "even" and "odd"?