$$\sum_{0}^{n}(5i+2)^2 = \sum_{0}^{n}(25i^2+20i+4) = \sum_{0}^{n}25i^2 + \sum_{0}^{n}20i + \sum_{0}^{n}4 = 25\sum_{0}^{n}i^2 + 20\sum_{0}^{n}i + 4\sum_{0}^{n}1$$

$$25.\left(\frac{n(n+1)(2n+1)}{6}\right) + 20.\left(\frac{n^2+n}{2}\right) + 4.(n+1) = 25\left(\frac{2n^3+3n^2+n}{6}\right) + 20\left(\frac{n^2+n}{2}\right) + 4n+4$$

$$\frac{50n^3+75n^2+25n+60n^2+60n+24n+24}{6} = \boxed{\frac{50n^3+135n^2+109n+24}{6}} \;//$$

Indução:

1) Caso base: $\frac{50.0^3+135.0^2+109.0+24}{6} = 4$ √

2) Indução propriamente dita:

$$S_n = S_{n-1} + a_n \rightarrow S_n = \frac{50(n-1)^3+135(n-1)^2+109(n-1)+24}{6} + (5n+2)^2$$

$$S_n = \frac{50(n^3-3n^2+3n-1)+135(n^2-2n+1)+109n-109+24}{6} + 25n^2+20n+4$$

$$S_n = \frac{50n^3-150n^2+150n-50+135n^2-270n+135+109n-85+150n^2+120n+24}{6}$$

$$\boxed{S_n = \frac{50n^3+135n^2+109n+24}{6}} \;//$$ √