We try to determine $S := \mathrm{Span}_k(G)$. Using $\{e1 - e2, e1\}$ as a basis for V, we have

$$\varphi(123) = \begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix} \text{ and } \varphi(12) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix},$$

so $S \subseteq T$, the k-subalgebra of all upper triangular matrices in $M_2(k)$. Since S is noncommutative, we must have $S = T$. It follows that $\mathrm{rad}\, S = \mathrm{rad}\, T = k \cdot \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix} = k \cdot (1 - \varphi(123))$.