$$T(n) = (\text{cost of base case}) \cdot (\text{\# of times base case reached}) + \sum_{i=0}^{\log_5 n - \log_5 4} (3^i)\left(\frac{n}{5^i}\right)^2$$

$$= (3)(3^k) + \sum_{i=0}^{\log_5 n - \log_5 4} (3^i)\left(\frac{n}{5^i}\right)^2$$

$$= 3^{k+1} + n^2 \sum_{i=0}^{\log_5 n - \log_5 4} \left(\frac{3^i}{25^i}\right)$$

$$= 3^{k+1} + n^2 \sum_{i=0}^{\log_5 n - \log_5 4} \left(\frac{3}{25}\right)^i \leftarrow \text{using geometric sum formula}$$

$$= 3^{k+1} + n^2 \left(\frac{1 - \frac{3}{25}^{\log_5 n - \log_5 4 + 1}}{1 - \frac{3}{25}}\right)$$

$$= 3^{k+1} + n^2 \left(\frac{1 - \frac{3}{25}^{\log_5 n - \log_5 4 + \log_5 5}}{\frac{22}{25}}\right)$$

$$= 3^{k+1} + \frac{25n^2}{22}\left(1 - \frac{3}{25}^{\log_5\left(\frac{5n}{4}\right)}\right)$$

log base change: $\log_5\left(\frac{5n}{4}\right) = \frac{\log_{3/25}\left(\frac{5n}{4}\right)}{\log_{3/25} 5}$

$$= 3^{k+1} + \frac{25n^2}{22}\left(1 - \cancel{\frac{3}{25}}^{\frac{\cancel{\log_{3/25}}\left(\frac{5n}{4}\right)}{\log_{3/25} 5}}\right)$$

$$= 3^{k+1} + \frac{25n^2}{22}\left(1 - \frac{5n}{4}^{\frac{1}{\log_{3/25} 5}}\right)$$

$$= 3^{k+1} + \frac{25n^2}{22} - \frac{125\,n^{2 + \frac{1}{\log_{3/25} 5}}}{88}$$

I know that $2 + \frac{1}{\log_{3/25} 5}$ is smaller than 2, such that our highest term is n^2, thus our final answer will be:

$$T(n) = \Theta(n^2)$$