Tyler Hughes

Quiz 7 5|9

$$T(n) = \begin{cases} 3 & : n < 4, \\ 3T(\frac{n}{5}) + n^2 & : n \geq 4. \end{cases}$$

Finding k, how many times it will run, until we reach the base case:

$$\frac{n}{5^k} < 4$$

$$n < 4(5^k)$$

$$\frac{n}{4} < 5^k$$

$$\log_5(\frac{n}{4}) < \log_5(5^k)$$

$$\log_5(\frac{n}{4}) < k$$

$$\log_5 n - \log_5 4 < k$$

I will now find the tree of $T(n)$: