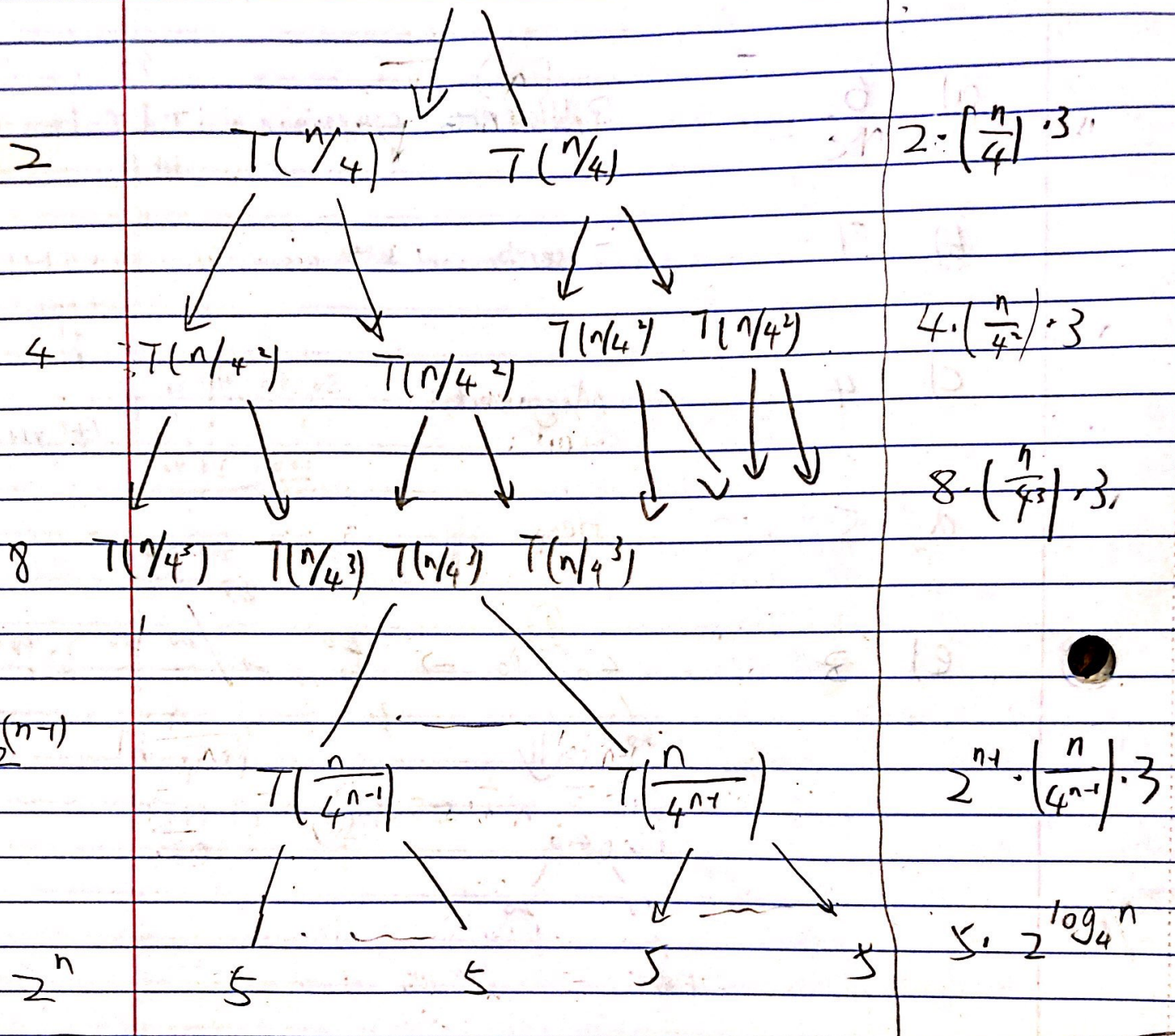


$$1) \quad T(n) = 2T(n/4) + 3n \quad [T(1) = 5] \quad 3n$$



$$T(n) = \sum_{i=1}^{\log_4 n} 2^i \cdot 3 \left(\frac{n}{4^i} \right) = 3n \sum_{i=0}^{\log_4 n} \left(\frac{1}{2} \right)^i = 3n \cdot \left(\frac{\frac{1}{2} \log_4 n + 1}{\left(\frac{1}{2} \right) - 1} \right)$$

$$= 3n \cdot \left(\frac{\frac{n^{\log_4(1/2)} + 1}{-1/2}}{-1/2} \right) = 3n \left(\frac{\frac{1}{\sqrt{n}} + 1}{-1/2} \right)$$

$$= -\frac{3n}{\sqrt{n}} + \frac{3n}{1/2} = 6n - \frac{3n}{\sqrt{n}}$$

$$T(n) \approx T(0) = 6n - \frac{3n}{\sqrt{n}}$$