3. **Solve $T(n) = T(\sqrt{n}) + 1$, using a change of variables: $m = \log_2 n$.**

$T(n) = T(n^{\frac{1}{2}}) + 1$

$m = \log_2 n \rightarrow 2^m = n$

From this, we can do change of variable: $T(2^m) = T(2^{\frac{m}{2}}) + 1$

$T(\log(2^m)) = T(\log(2^{\frac{m}{2}})) + 1$

$T(m) = T(\frac{m}{2}) + 1$

From this, we can use the master-method on $T(m) = T(\frac{m}{2}) + 1$

$a = 1$, $b = 2$, $f(m) = 1$, leaf-level $= m^{\log_2 1} = m^0 = 1$

$f(m) = \Theta(m^{\log_2 1}) = \Theta(1)$

Therefore, case #2: $T(m) = \Theta(1 \cdot \log m) = \Theta(\log m)$

$$T(n) = \Theta(\log(\log_2 n))$$