$$T(n) = T\left(\frac{n}{2}\right) + 5$$

$a = 1 \quad b = 2 \quad \log_2 1 = 0 = k = 0$

$k = 0 \quad p = 0$

Case 2: $p > -1$

$$\Theta(n^0 \log^{0+1} n) = \Theta(\log n)$$

$$T(n) = 7T\left(\frac{n}{2}\right) + 10n^2$$

$a = 7 \quad b = 2 \quad \log_2 7 < \log_2 8 = 3$

$k = 2 \quad p = 0$ Case 1: $\log_2 7 > k$

$$\Theta(n^{\log_2 7})$$

$$T(n) = 2T(n-1) + 1$$

$a = 2 \quad b = 1$ Case 3: $a > 1$

$k = 0$

$$O(n^k a^{\frac{n}{b}})$$

$$= \Theta(n^0 2^{\frac{n}{1}})$$

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

$$T(n) = 2T\left(\frac{n}{8}\right) + \sqrt{n}$$

$a = 2 \quad b = 8$

$k = \frac{1}{2} \quad p = 0$

$\log_8 2 < \log_8 64 = 2$

$\log_8 2 < \frac{1}{2}$

Case 3: $\log_b a < k$

$p \geq 0 \rightarrow \Theta(n^k \log^p n)$

$= \Theta(n^{\frac{1}{2}} \log^0 n) = \Theta(\sqrt{n})$