5. $T_A(n) = 7T_A(n/2) + n^2$

$k = 7$

$m = 2$

$d = 2$

$7 > 2^2 \iff 7 > 4$

$\downarrow$

$k > m^d$

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

$\log_2 7 = \simeq 2,8$

$T_B = aT_B(n/4) + n^2$

$k = a$

$m = 4$

$d = 2$

- dacă $a < 4^2$

  $\Rightarrow \Theta(n^2) \mid n^2 < n^{2.8}$

- dacă $a = 4^2$ $\longrightarrow T_B > T_A$ (3)

  $\Rightarrow \Theta(n^2 \log_4 n)$ (3)

- dacă $a > 4^2$ $\longrightarrow$ Din (1), (2) și (3) $\Rightarrow$

  $\Rightarrow \Theta(n^{\log_4 k})$ (2)

  $\Rightarrow a < 49$

  $a > 0$

  $a \neq 16$

$\forall a > 0, \in (0, 15] \Rightarrow T_B < T_A$

$\forall a > 0, \in (16, 48] \Rightarrow T_B < T_A$

$\frac{n}{4} = \frac{n}{2} \cdot \frac{1}{2}$

$\log_2 7 \simeq \log_4 49$ (1)

$\log_4(48) = \simeq 2.7 < \underbrace{2.8}_{\log_2 7}$