Algo Assignment 2

Give asymptotic upper bound for $T(n)$
Assume $T(n) = n$ for $n \leq 5$
Select tightest bound and method:

① $T(n) = T(n-3) + 2$
② $T(n) = T(9n/10) + 1$
③ $T(n) = T(\frac{\sqrt{n}}{2}) + 1$
④ $T(n) = 3T(n-1)$
⑤ $T(n) = 2T(n/2) + 2$
⑥ $T(n) = (T(\sqrt{n}))^2$
⑦ $T(n) = 5T(n/3) + n$
⑧ $T(n) = 8T(n/4) + n^2$
⑨ $T(n) = 27T(n/9) + n\log n$
⑩ $T(n) = 4T(n/4) + n/\log n$

Options:

1. $\Theta(\log\log n)$
2. $\Theta(\log n)$
3. $\Theta((\log n)^2)$
4. $\Theta(\sqrt{n})$
5. $\Theta(\sqrt{n}\log n)$
6. $\Theta(n)$
7. $\Theta(n\log\log n)$
8. $\Theta(n\log n)$
9. $\Theta(n^{3/2})$
10. $\Theta(n^2)$
11. $\Theta(2^{n/2})$
12. $\Theta(2^n)$
13. $\Theta(2^{n^2})$
14. $\Theta(2^{2^{n/2}})$
15. $\Theta(2^{2^{n-2}})$
16. $\Theta(2^{2^n})$
17. Θ(something else)

Method:

a) direct or guessing method
b) direct or master method