

Solve the divide-and-conquer relations using a change of variables.

- (a)  $a_n = 5a_{n/2} + 4$  where  $a_1 = 0$  and  $n = 2^k$  for  $k \geq 0$ .
- (b)  $a_n - 2a_{n/3} = 4$  where  $a_1 = 5$  and  $n = 3^k$  for  $k \geq 0$ .
- (c)  $a_n - 3a_{n/8} = 2n$  where  $a_1 = 1$  and  $n = 8^k$  for  $k \geq 0$ .
- (d)  $a_n - 5a_{n/3} = n$  where  $a_1 = 5/2$  and  $n = 3^k$  for  $k \geq 0$ .
- (e)  $a_n - 5a_{n/5} = n$  where  $a_1 = 7$  and  $n = 5^k$  for  $k \geq 0$ .