

$$\text{Case B) } (k+1) \bmod 3 = 1$$

According to the non-recursive formula:

$$f(k+1) = 0$$

According to the recursive formula:

$$f(k+1) = 2f((k+1)-3)$$

$$= 2f(k-2)$$

$$= 2(0)$$

$$= 0$$

Justification:

Similar to case A.

$$((k+1) \bmod 3 = 1) \rightarrow ((k-2) \bmod 3) = 1$$

Thus, substitute the non-recursive formula  $f(u) = 0$ .

Therefore, for case B the recursive and non-recursive formulas are equivalent.

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$$\text{Case C) } (k+1) \bmod 3 = 2$$

According to the non-recursive formula:

$$f(k+1) = 2^{((k+1)+1)/3} = 2^{(k+2)/3}$$

According to the recursive formula:

$$f(k+1) = 2f(k-2)$$

$$= 2 \left( 2^{((k-2)+1)/3} \right)$$

$$= 2 \left( 2^{(k-1)/3} \right)$$

$$= 2^{(k-1)/3 + 1}$$

$$= 2^{(k-1+3)/3}$$

$$= 2^{(k+2)/3}$$

Therefore, for case C the recursive and non-recursive formulas are equivalent.