IMC Sequences

1. [IMC 2012 Q17] The first term of a sequence of positive integers is 6. The other terms in the sequence follow these rules:

    if a term is even then divide it by 2 to obtain the next term

    if a term is odd then multiply it by 5 and subtract 1 to obtain the next term.

    For which values of n is the nth term equal to n?

    A 10 only   B 13 only   C 16 only   D 10 and 13 only   E 13 and 16 only

(This was the only harder sequences question in the IMC between 2004 and 2012. See the Olympiad collection for more sequences questions)

Answers

1. E