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Part 2

2a) 1. $(a \lor b) \oplus (c \land d)$

2. $\neg a$

3. $\neg c$

4. $\neg\neg\neg c$ (3, double negation)

5. $\neg\neg\neg c \lor \neg d$ (4, addition)

6. $\neg(\neg\neg c \land d)$ (5, De Morgan)

7. $\neg(c \land d)$ (6, double negation)

8. $a \lor b$ (7, 1)

9. b (8, 2)

2b) 1. Assume: $f(0) = 0$, $f(1) = 2$, $f(n) = f(n-1) + 3f(n-2) + 4$ and $f(n)$
equals an odd number, for some $n < 0$

   2. However: the least value n for which $f(n)$ is defined is $n = 0$
as $f(0) = 0$. It contradicts with the assumption of $f(n)$ for some
$n < 0$. Therefore, for every $n \geq 0$, $f(n) = f(n-1) + 3f(n-2) + 4$
equals an even number