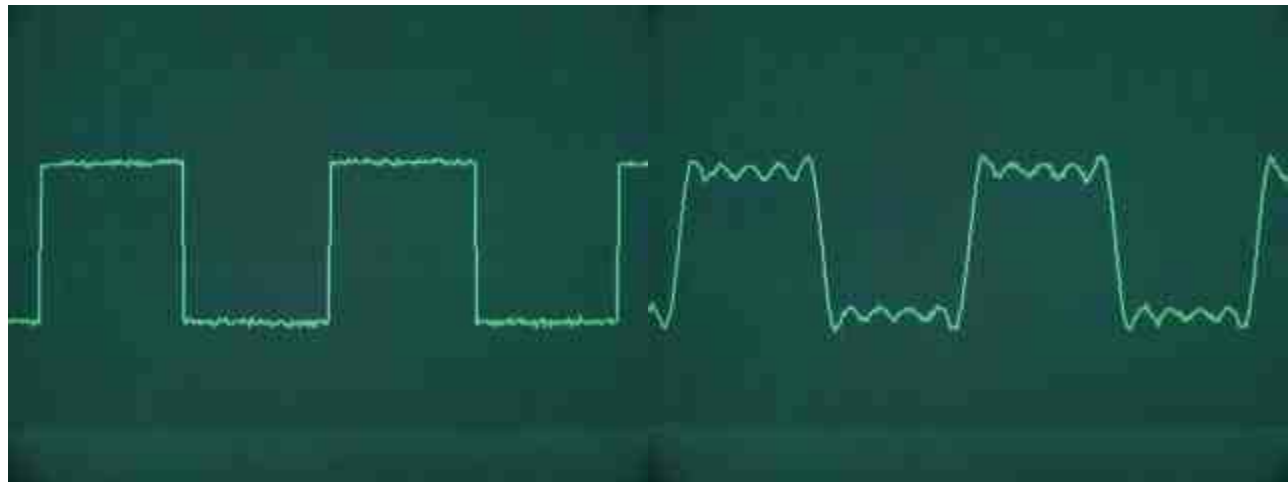


Question #229



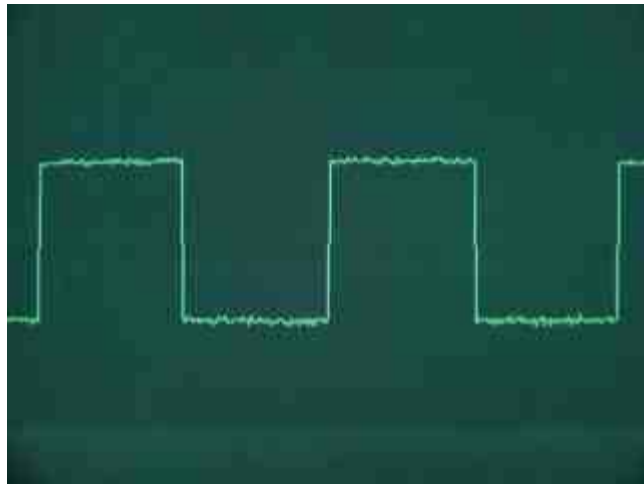
The photographs above show (on the right) a square wave synthesized from all of the (odd) components up through the ninth harmonic. At the left is the experimental setup used to display the wave above. The masked oscilloscope screen shows a square wave of the same frequency and amplitude as that synthesized at the right, except that the square wave has been put through a low-pass filter with a cutoff frequency equal to that of the tenth harmonic of the square wave.

Shown below are two photographs of the oscilloscope face displaying the unfiltered square wave (left) and the square wave synthesized from its harmonics up through the ninth.

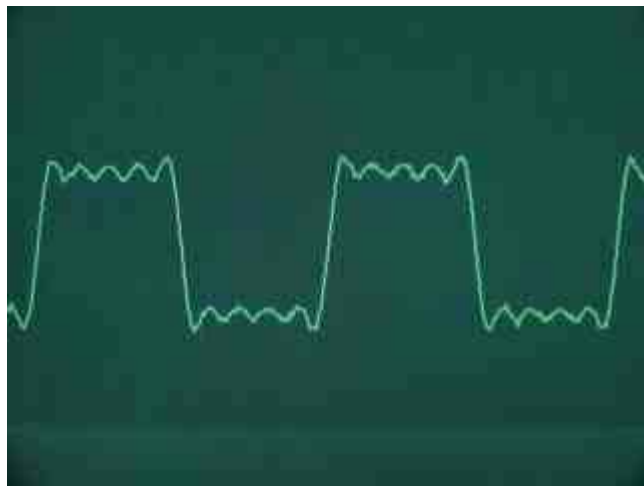


The question this week involves how the filtered square wave might appear. Several suggestions are shown below, labelled (a) through (e).

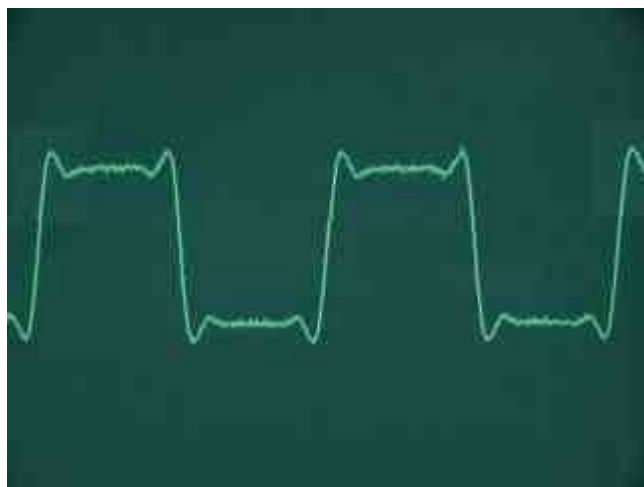
(a)



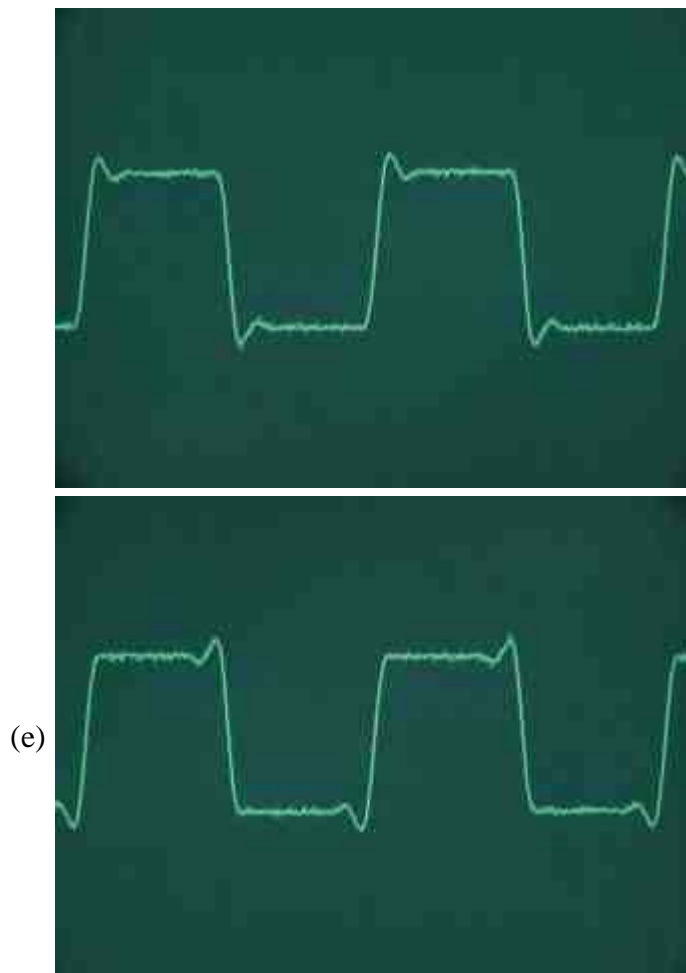
(b)



(c)



(d)



Which of the above oscilloscope photographs more nearly represents the filtered square wave?

- (a) Picture (a).
- (b) Picture (b).
- (c) Picture (c).
- (d) Picture (d).
- (e) Picture (e).

Click here for [Answer #229](#) after October 31, 2005.

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For questions and comments regarding the *Question of the Week* contact

[Dr. Richard E. Berg](#) by e-mail or using phone number or regular mail address given on the [Lecture-Demonstration Home Page](#).