EE 321 Analog Electronics, Fall 2011
Homework #4 solution

2.95. An op amp having a slew rate of 20 V/μs is to be used in the unity-gain follower configuration. With input pulses that rise from 0 to 3 V. What is the shortest pulse that can be used while ensuring full-amplitude output? For such a pulse, describe the output resulting.

The shortest duration of the pulse, T, is one for which the output rises from zero to 3 V in exactly the duration of the pulse. We thus have

$$T\,V_s = V_o$$

$$T = \frac{V_o}{V_s} = \frac{3}{20} = 150\,\text{ns}$$

For this pulse duration the input and output are plotted below. The input is the dashed curve, the output is the solid curve.