

# Assignment 3 feedback

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## 1. f-I curves

In 1 and 2, you should be able to see the I-V relation changes from Fig. 7.2 to Fig. 7.6 in Rinzel and Ermentrout as `betaw_m1` changes from 0 mV to -20 mV.

In 3, the Hodgkin-Huxley neuron is class 2 and should behave like Fig 7.6.

## 2. Channel dynamics during spike generation

1. As in Fig. 6.5 in Koch, fast activation of the Na<sup>+</sup> channel followed by delayed activation of the K<sup>+</sup> channel characterizes spike generation.
2. With brief hyperpolarization, the K<sup>+</sup> channel slowly deactivates. While it recovers eventually, but the rate is too slow to restore the balance in time. Eventually, the Na<sup>+</sup> channel activates and an action potential fires.
3. Anode break excitation is a characteristic phenomenon in neurons that the outward current dominates and therefore have class II or III excitability. It was originally found in the giant squid axon and replicated by the Hodgkin-Huxley model.