Updated solutions for 8.02x practice quizzes 1a and 1b

Practice Quiz 1a, problem 1, part b: Potential energy of negative charge Q_0 as a function of x



Local (unstable) maximum in between Q_2 and Q_1

Practice Quiz 1a, problem 3, part b:

Consider the external field as shown on the solutions:

The positive charge feels a force towards -x, the negative charge feels a force towards +x. Because the <u>external</u> field at the pos. charge is bigger (denser field lines), the net force will be towards -x, if both charges have the same magnitude. Note that the field of the two dipole charges does not play a role - the dipole can't exert a net force on itself.

Increasing the negative charge will increase the force on the negative charge in +x direction, until eventually the net force on the dipole is in +x. <u>Unlike what it says in the solutions</u>, the net torque will not reverse and the dipole is still in a stable orientation.

Practice Quiz 1a, problem 4, part c:



Practice Quiz 1b, problem 3, part a:

Practice Quiz 1b, problem 4, part c:

