A 49 kg squirrel jumps from a tree branch that is 3.6 m high to the top of a bird feeder that is 1.5 m high. What is the change in gravitational potential energy of the squirrel?

Solution

The gravitational potential energy of the squirrel is

$$E = mgh$$

where m is a mass of squirrel, h is height of squirrel and g if the constant of gravity.

The change in gravitational potential energy is

$$\Delta E = E_2 - E_1 = mgh_2 - mgh_1 = mg(h_2 - h_1) = 49 \text{ kg} * 9.8 \frac{m}{s^2} * (1.5 \text{ m} - 3.6 \text{ m})$$
$$= -1008.42J = -1.008 \ kJ$$

Answer: $-1.008 \ kJ.$