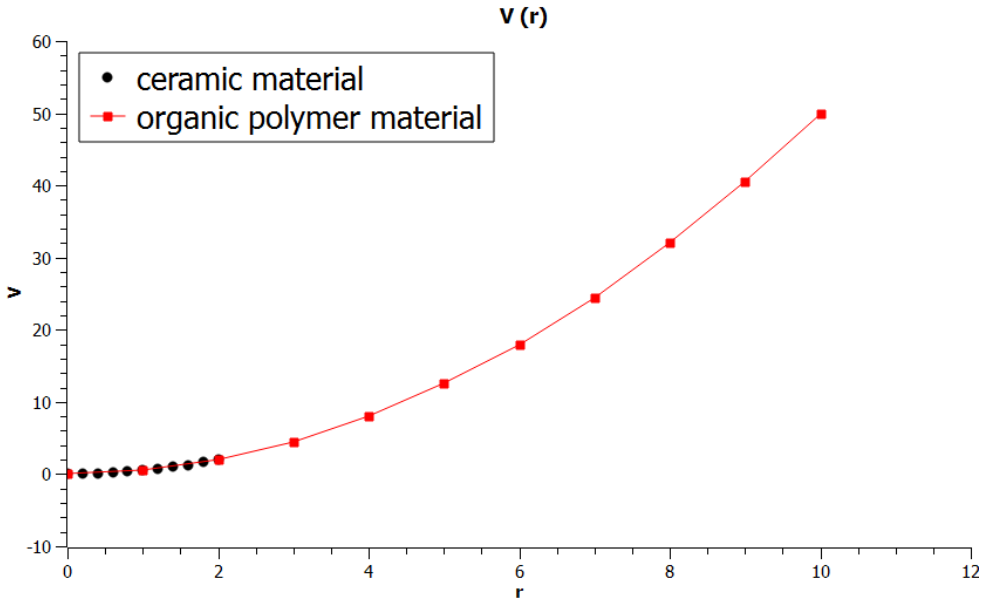
Question: How to Sketch the variation of potential energy(v) with the separation(r) between two atoms/molecules in an organic polymeric material and a hard ceramic material suitable for high temperature applications.

Solution: Potential energy characterizes the interaction between the parts of an atom or molecule and approximately expressed by the formula:

$V = (k \cdot r^2) / 2$

Ceramic materials are composed of a large number of tiny crystals or granules, which are quartz glass-type material. These materials are chemically stable, because the outer electrons of atoms glassy substance retained strong bonds between the atoms of the substance and can not interact with the ions of other substances. In ceramic materials very high melting point, since the crystals are composed of ions, held next to each other by strong ionic bonds.
The polymers consist of long molecules, each of which is formed by the same groups of atoms, referred to the monomers, they are connected to other monomers to form chains. The unstretched molecules typically randomly entangled with each other and have overlapping intermolecular bonds holding the solid in a fixed position.
In the hard ceramic material suitable for high temperature applications of the atoms and molecules are not very far apart, they are closer as compared with atoms and molecules in the organic polymeric material. Proceeding from the above formula can be written to conclude that the potential energy in the organic polymeric material will be much more for energy in the ceramic material.
In general, the dependence of the potential energy of the separation is a power-law dependence.
Thus the variation of potential energy(V) with the separation(r) between two atoms/molecules can be represented as follows:



Answer: the dependence of the potential energy of the separation is a power-law.