

## 1 Linear Quadrupole (w/o series)

Consider a collection of three charges arranged in a line along the  $z$ -axis: charges  $+Q$  at  $z = \pm D$  and charge  $-2Q$  at  $z = 0$ .

- (a) Find the electrostatic potential at a point  $\vec{r}$  on the  $x$ -axis at a distance  $x$  from the center of the quadrupole.
- (b) A series of charges arranged in this way is called a linear quadrupole. Why?