Show all work. How you get your answer is just as important, if not more important, than the answer itself. If you think it, write it!

For the points $P = (1,2,3)$ and $Q = (3,-2,7)$ in 3-space, find

(a) the vector $\mathbf{v}$ (in coordinate form) from $P$ to $Q$, 
(b) the length of this vector $\mathbf{v}$, and 
(c) the vector, pointing in the opposite direction from $\mathbf{v}$, which is 3 times as long.