(10.1) Show that $[\phi(x), P^\alpha] = i\partial^\alpha \phi(x)$, where P^α is the conserved charges from spacetime translation (eqn 10.28).

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We have
$$[\phi(x), P] = iD\phi(x)$$
where $D\phi$ is a directional derivative.

In component notation
$$[\phi(x), a_\mu P^\mu] = ia_\mu \partial^\mu \phi(x)$$

Hence
$$[\phi(x), P^\mu] = i\partial^\mu \phi(x)$$