From equation (5.6)

$$\phi(\mathbf{p}) = \int_{\mathbb{R}^3} \exp\left(-\frac{i\mathbf{p}\cdot\mathbf{x}}{\hbar}\right) f(\mathbf{x})\,dx\,dy\,dz \tag{1}$$

where $\phi(\mathbf{p})$ is the amplitude for the state $\mathbf{p} = (p_x, p_y, p_z)$.

From equation (5.36)

$$F_{a,b,c} = \int_{\mathbb{R}^3} \chi^*_{a,b,c}(\mathbf{x}) f(\mathbf{x})\,dx\,dy\,dz \tag{2}$$

where $F_{a,b,c}$ is (for this problem) the amplitude for the state $p_x = a$, $p_y = b$, and $p_z = c$.

Noting that (1) and (2) are identical for the state $\mathbf{p} = (a, b, c)$ we have

$$\chi^*_{a,b,c}(\mathbf{x}) = \exp\left(-\frac{i(a,b,c)\cdot\mathbf{x}}{\hbar}\right)$$

and

$$\chi_{a,b,c}(\mathbf{x}) = \exp\left(\frac{i(a,b,c)\cdot\mathbf{x}}{\hbar}\right)$$