1.6 Covariance of two variables x and y is given by 1.41:

$$cov[x, y] = E_{x,y}[xy] - E[x]E[y]$$

The term $E_{x,y}[xy]$ is defined as:

$$E_{x,y}[xy] = \int_y \int_x xy\, p(x, y)\, dx\, dy$$

Since x and y are independent, $p(x, y) = p(x)p(y)$

$$\begin{aligned}
\implies E_{x,y}[xy] &= \int_y \int_x xy\, p(x)p(y)\, dx\, dy \\
&= \int_y y\, p(y) \left(\int_x x\, p(x)\, dx \right) dy \\
&= \int_y y\, p(y)\, E[x]\, dy \\
&= E[x] \int_y y\, p(y)\, dy \\
&= E[x]\, E[y]
\end{aligned}$$

Therefore, covariance becomes:

$$cov[x, y] = E[x]E[y] - E[x]E[y] = 0.$$