**Problem**

Let X and Y be jointly continous random variables such that Xand the conditional probability density function of Y given X is:

Find 𝔼[Y|X = x] for each x and calculate 𝔼[Y] + 9.

**Solution**

We compute

𝔼[Y|X = x] = = .

Then,

𝔼[Y] = = = 2.

Thus,

𝔼[Y] + 9 = 2 + 9 = **11**

**Answer: 11**