9. 解：

（1）

$$f(x,y)=\begin{cases}12y^2 & 0\le y\le x\le 1\\ 0 & \text{otherwise}\end{cases}$$

设 $G:\{(x,y)\,|0\le y\le x\le 1\}$

$$\begin{aligned}E(x)=E(g(X,Y))&=\iint xf(x,y)dxdy\\&=\iint\limits_G x\cdot 12y^2dxdy\\&=\int_0^1dx\int_0^x12xy^2dy\\&=\frac{4}{5}\end{aligned}$$

同理，

$$E(Y)=\iint\limits_G y\cdot 12y^2dxdy=\int_0^1dx\int_0^x12y^3dy=\frac{3}{5}$$

$$E(XY)=\iint\limits_G xy\cdot 12y^2dxdy=\int_0^1dx\int_0^x12xy^3dy=\frac{1}{2}$$

$$E(X^2+Y^2)=\iint\limits_G (x^2+y^2)\cdot 12y^2dxdy=\int_0^1dx\int_0^x12(x^2y^2+y^4)dy=\frac{16}{15}$$