The paraboloid $z = 1 - x^2 - y^2$ intersects the xy -plane in the circle $x^2 + y^2 = r^2 = 1$ or $r = 1$, so in cylindrical coordinates, E is given by $\left\{ (r, \theta, z) \,\middle|\, 0 \le \theta \le \frac{\pi}{2}, 0 \le r \le 1, 0 \le z \le 1 - r^2 \right\}$.
Thus

$$\begin{aligned}
\iiint_E 3(x^3 + xy^2)\, dV &= 3 \int_0^{\pi/2} \int_0^1 \int_0^{1-r^2} (r^3 \cos^3 \theta + r^3 \cos\theta \sin^2 \theta)\, r\, dz\, dr\, d\theta = 3 \int_0^{\pi/2} \int_0^1 \int_0^{1-r^2} r^4 \cos\theta\, dz\, dr\, d\theta \\
&= 3 \int_0^{\pi/2} \int_0^1 r^4 \cos\theta \,[\, z \,]_{z=0}^{z=1-r^2}\, dr\, d\theta = 3 \int_0^{\pi/2} \int_0^1 r^4 (1 - r^2) \cos\theta\, dr\, d\theta \\
&= 3 \int_0^{\pi/2} \cos\theta \left[\tfrac{1}{5} r^5 - \tfrac{1}{7} r^7 \right]_{r=0}^{r=1} d\theta = \int_0^{\pi/2} \tfrac{6}{35} \cos\theta\, d\theta = \tfrac{6}{35} \left[\sin\theta \right]_0^{\pi/2} = \tfrac{6}{35}
\end{aligned}$$