1. Let $c(t) = (e^{2t}, e^t, e^{5t})$. Show that $c(t)$ is a flow line of the vector field $F(x, y, z) = (2y^2, y, 5x^2y)$.

Velocity $c'(t) = (2e^{2t}, e^t, 5e^{5t})$.

$F(c(t)) = (2 \cdot (e^t)^2, e^t, 5(e^{2t})^2 e^t)$

$= (2e^{2t}, e^t, 5e^{5t})$

$= c'(t)$.

So $c(t)$ is a flow line of F.