1) Sketch a 2-D vector field that has non-zero divergence but zero curl.

2) Sketch a 2-D vector field that has zero divergence but non-zero curl.

3) Sketch a 2-D vector field that has non-zero divergence but non-zero curl.

4) Compute the Gradient of $f = x^2 + y^2 + z^2$.

5) Compute the Divergence of $f = \{x\,y,\, z/y,\, x\,y\}$.

6) Compute the Curl of $f = \{y,\, -x,\, 0\}$

7) Write down Maxwell's Equations in differential form (not integral form)