Chain Rule Practice

Compute the following derivatives.

1. Find the derivative of
$$f(x) = e^{\cos(x)}.$$

2. Find the derivative of
$$g(x) = \cos(x^2)\sin(x^3).$$

3. Find the derivative of
$$\ell(x) = \cos(xe^x).$$

4. Find the derivative of
$$k(x) = 2^{\left(3^{\left(5^x\right)}\right)}.$$