Let $f(x) = e^{x^2}$ **and** $g(x) = x\,f(x) = xe^{x^2}$

1. Use the Maclaurin polynomial for e^x to find a Maclaurin polynomial for $f(x)$. Include at least five non-zero terms.

   What is $f'''(0)$? $f^{(7)}(0)$? $f^{(8)}(0)$?

2. Use your Maclaurin polynomial for $f(x)$ to find the Maclaurin polynomial for $g(x)$

   What is $g^{(6)}(0)$? $g^{(7)}(0)$? $g^{(328)}(0)$?