MATH 252 (PHILLIPS): WRITTEN HOMEWORK 3.

This homework sheet is due in class on Friday 26 January 2018 (week 3).
All the requirements in the sheet on general instructions for homework apply. In particular, show your work (unlike WeBWorK), give exact answers (not decimal approximations), and use correct notation. (See the web page on notation.)

1. (10 points.) Define

\[ h(x) = \int_{6}^{2x} \cos(t^3) \, dt. \]
Find \( h'(x) \).

2. (10 points.) Define

\[ w(x) = \int_{3}^{x^2} t \cos(e^t) \, dt. \]
Find \( w'(x) \).

3. (10 points.) Define

\[ h(t) = \arctan(t) \int_{6}^{t} s \sin^2(e^s) \, ds. \]
Find \( h'(s) \).

4. (10 points.) Let \( F \) be a function such that \( F'(x) = e^{x^3} \). Find

\[ \int \sin(x) \exp(\cos^3(x)) \, dx \]
in terms of \( F \) and elementary functions.

5. (10 points.) Let \( G \) be a function such that \( G'(x) = \sin(2x^3) \). Find

\[ \int_{2}^{5} x \sin(2x^6) \, dx \]
in terms of \( G \) and elementary functions.