Math 1720 Homework 6, due Friday Mar 2.
Explain all answers and show all calculations.

7.4: 16, 19, 21, 25, 26
Problems A, B.

Hint: note that in 7.4: 16, the data being described is the *rate* of oil consumption, not the quantity of oil consumed.

A. A function $f(x)$ has exponential growth and a doubling time of $T_2 = 0.4$. Suppose $f(2) = 16$. Find the formula for $f(x)$ and find $f(0)$.

B. A steamship is initially travelling along in a straight line, at a constant speed. At the stroke of midnight, it cuts its propellors. Its velocity function $v(t)$ has exponential decay, where $v(t)$ is the velocity in meters per second, at t seconds after midnight. Suppose that its velocity decreases by 2% every second (after cutting its propellors), and after 1 minute its velocity is 15 meters per second.
(i) Find the ship's original velocity at midnight.
(ii) Find the half-life of the velocity function, and use this to determine how long it will take the ship to slow to 1/16 of its midnight speed.
(iii) Find the total distance travelled by the ship over the time interval from 11:59pm to 12:01am.