Problem 5 (due Monday, September 20)

To have the same driving range as a standard automobile powered by gasoline, a methane-fueled car would require a 40 m$^3$ tank if the storage conditions were 1 bar and 27 °C. Instead, if the methane was stored at 200 bar and 27 °C, calculate the required tank volume in several ways:

a) NIST database (http://webbook.nist.gov/chemistry/)
b) Ideal gas law
c) Lee/Kesler generalized-correlation
d) van der Waals EOS
e) Redlich/Kwong EOS
f) Comment on the ease of use and accuracy of the various methods in parts a through e.