

**Math 151****Quiz 4**

Justify all answers with neat and organized work. Clearly indicate your answers.  
10 points possible.

1. (3 pts.) A sample of a gas is compressed at a constant temperature of  $25^\circ\text{C}$ . The volume  $V$  (in cubic meters) is found to be related to the pressure  $P$  (in kilopascals) by the equation  $PV = 5.3$ . Find the rate of change of volume with respect to pressure.

2. (4 pts.) Differentiate  $y = x^5(\cos x + \tan x)$ . You do not have to simplify your answer.

3. (3 pts.) Find  $\lim_{x \rightarrow 0} x \cot 7x$ . Show all work, showing clearly how you use the basic trig limit.