MTH 254 **HW #6** Spring 2015

1. The temperature of a gas in $^\circ F$ is given by $T = 3x^2 - 5xy + 2y^2z$, with x, y, z in feet. *(What are the units of "2", "3", and "5"?)*

   (a) What is the rate of change in the temperature at the point $(1, 2, 3)$ in the direction of $\vec{\boldsymbol{v}} = 2\hat{\boldsymbol{\imath}} + \hat{\boldsymbol{\jmath}} - 2\hat{\boldsymbol{k}}$? *Give units!*

   (b) What is the direction of maximum rate of change of temperature at the point $(1, 2, 3)$? *What are the units?*

   (c) What is the maximum rate of change of temperature at the point $(1, 2, 3)$? *Give units!*