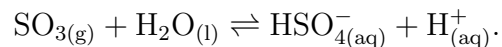# Chemistry 2720 Fall 2005 Quiz 4

Name:_____

Marks for this quiz: 12

When sulfur trioxide dissolves in water, it forms sulfuric acid which immediately dissociates:

$$SO_{3(g)} + H_2O_{(l)} \rightleftharpoons HSO^-_{4(aq)} + H^+_{(aq)}.$$

Calculate the equilibrium constant for this reaction at 50°C. What does the magnitude of this number tell you about the solubility of SO_3 in water?

$$R = 8.314\,472\,\mathrm{J\,K^{-1}mol^{-1}}$$

To convert degrees Celsius to Kelvin, add 273.15.

Species	$\Delta \bar{H}^\circ_f$ (kJ/mol)	$\Delta \bar{G}^\circ_f$ (kJ/mol)	$\bar{C}_P$ $(\mathrm{J\,K^{-1}mol^{-1}})$
$H_2O_{(l)}$	-285.830	-237.140	75.40
$HSO^-_{4(aq)}$	-887	-677	
$SO_{3(g)}$	-395.7	-371.1	50.67