Answer to Question #50813, Chemistry, Physical Chemistry

at 727 degree temperature the equilibrium constant of this reaction is 256.
2SO2 +O2=2SO3
WHAT IS THE EQUILIBRIUM CONSTANT AT SAME TEMPERATURE FOR THIS REACTION
2SO3=2SO2 +O2
ANS 6.25*10^-2 HOW??

Solution:
$2SO_2 + O_2 \rightarrow 2SO_3$

$$K_1 = \frac{[SO_2]^2[O_2]}{[SO_3]^2}$$

$2SO_3 \rightarrow 2SO_2 + O_2$

$$K_2 = \frac{[SO_3]^2}{[SO_2]^2[O_2]}$$

$$K_2 = \frac{1}{K_1}$$

$$K_2 = \frac{1}{256} = 3.91 \times 10^{-3}$$

Answer:
3.91×10^{-3}