Part I: Preparation of a standard absorption curve for $FeSCN^{+2}$

Standard	0.20M $Fe(NO_3)_3$	0.0020 M KSCN	0.100M HNO_3	[$FeSCN^{+2}$]	Absorbance
A	10.0 mL	0.0 mL	15.0 mL	0.000M	0.000
B	10.0 mL	1.0 mL	14.0 mL	8.00e-5M	0.308
C	10.0 mL	1.5 mL	13.5 mL	1.20e-4M	0.538
D	10.0 mL	2.0 mL	13.0 mL	1.60e-4M	0.706
E	10.0 mL	2.5 mL	12.5 mL	2.00e-4M	0.900
F	10.0 mL	3.0 mL	12.0 mL	2.40e-4M	1.100

EQUATION: y=4622.1x-0.0243 **R^2** 0.997

Part 2: Measuring Equilibrium

Test Solution	0.0020 M $Fe(NO_3)_3$	0.0020 M KSCN	0.10 M HNO_3	Initial [Fe^{+3}]	Initial [SCN^-]	Absorbance	Equilibrium [$FeSCN^{+2}$]*
I	**5.0 mL**	**0**	**5.0 mL**	0.0010M	0.000M	0.0000	
II	**5.0 mL**	**1.0 mL**	**4.0 mL**	0.0010M	0.0002M	0.1600	3.99x10^-5M
III	**5.0 mL**	**2.0 mL**	**3.0 mL**	0.0010M	0.0004M	0.3700	8.53x10^-5M
IV	**5.0 mL**	**3.0 mL**	**2.0 mL**	0.0010M	0.0006M	0.5800	1.31x10^-4M
V	**5.0 mL**	**4.0 mL**	**1.0 mL**	0.0010M	0.0008M	0.6780	1.52x10^-4M
VI	**5.0 mL**	**5.0 mL**	**0.0 mL**	0.0010M	0.0010M	1.280	2.82x10^-4M

* To be determined from the standard graph equation.

ANALYSIS:

1. Use your graph equation to calculate the equilibrium concentrations of $FeSCN^{+2}$.
2. Prepare and ICE chart for each test solution (II – VI) and calculate the value of K_{eq} for each of your 5 tests solutions.

SAMPLE ICE CHART

Test Solution Keq = _____	Fe^{3+} +	SCN^- ⇄	$FeSCN^{2+}$
I			
C			
E			

CONCLUSION AND EVALUATION:

1. Comment on your Keq values. Do your results convince you that K_{eq} is a constant value regardless of the initial concentrations of the reactants? Why or why not?
2. Calculate the average value of K_{eq} from your five trials. The actual value of K_{eq} for this reaction at 25°C is reported as 280. Calculate (should you use all of your values?) the percent difference of your average value from the reported value:

$$\% \text{ difference} = \frac{(\text{experimental value} - \text{reported value})}{\text{Reported value}} \times 100\%$$

1. No. The Keq is not a constant value regardless of initial concentrations, as the initial concentrations vary and alter the Keq. It is quite visible that as the concentration of the reactants increases, so does the Keq.

2. The average value we achieved was 1.38x10^-4, and the percent difference was 99.9%.