6.

a)

b) $465099 = 129173[\text{phenol}] + 16093$

$449006 = 129173[\text{phenol}]$

$3.476\ \text{ppm} = [\text{phenol}]$ ← sf based on x-axis of graph

$$\frac{e_x}{3.476} = \sqrt{\left(\frac{5599}{129173}\right)^2 + \left(\frac{21931}{449006}\right)^2} = 0.065302$$

$e_x = (0.065302)(3.476) = 0.227$

$\boxed{3.476 \pm 0.227\ \text{ppm}}$

c)

soln 1	soln 2
4.3709 g sample	10.00 mL soln 7
$V_T = 500.0$ mL	$V_T = 250.0$ mL

$[\text{phenol}]_{\text{soln 2}} = 3.476\ \text{ppm}$

$(250.0\text{mL})(3.476\ \text{ppm}) = (10.00\text{mL})[\text{P}]_{\text{soln 1}}$

$86.9\ \text{ppm} = [\text{phenol}]_{\text{soln 1}}$

$$86.9\ \frac{\text{mg}}{\text{L}}\ (0.5\text{L}) = 43.45\text{mg} \times \frac{1\text{g}}{1000\text{mg}} = 0.04345\text{g}$$

$$\frac{0.04345\text{g}}{4.3709\text{g}} \times 100 = 0.9941\%$$

error

$(0.9941\%)(0.065302) = 0.0649$

$\boxed{\text{answer} = 0.9941 \pm 0.0649\%}$

7.

soln 1	soln 2
Cu^{2+}	5.00 mL soln 1 5.00 mL of 7.25 ppm Cu^{2+}
$A_1 = 0.354$	$A_2 = 0.544$
C_1	$C_2 = \frac{5C_1 + 5(7.25)}{10}$

$$\frac{A_1 = \cancel{k}C_1}{A_2 = \cancel{k}C_2} \qquad \frac{0.354 = C_1}{0.544 = \frac{5C_1 + 36.25}{10}}$$

$$0.6507 = \frac{10C_1}{5C_1 + 36.25}$$

$$3.25C_1 + 23.59 = 10C_1$$

$$23.59 = 6.75C_1$$

$$3.49 \text{ ppm} = C_1$$

8.

soln 1	soln 2	soln 3
1.549 g Ni sample	5.00 mL soln 1	5.00 mL soln 1
	15.0 mL NH_3	2.00 mL 57.1 ppm Ni^{2+}
V_T = 100.0	V_T = 50.00	15.0 mL NH_3
	A = 0.432	V_T = 50.00
		A = 1.081

$$\frac{A_2}{A_3} = \frac{\cancel{k}C_2}{\cancel{k}C_3} \qquad C_2 = \frac{5c_1}{50} \qquad C_2 = \frac{5c_1 + 2(57.1)}{50}$$

$$\frac{0.432 = 5c_1/\cancel{50}}{1.081 = 5c_1 + 114.2/\cancel{50}}$$

cross multiply

$$2.115c_1 + 49.3344 = 5.405c_1$$

$$49.3344 = 3.290c_1$$

$$15.0 \text{ ppm} = c_1$$

$$15.0 \frac{mg}{L}(0.1L) = 1.50 \text{ mg } Ni = \frac{0.0015 g}{1.549 g} \times 100 =$$

$$= 0.0968\%$$