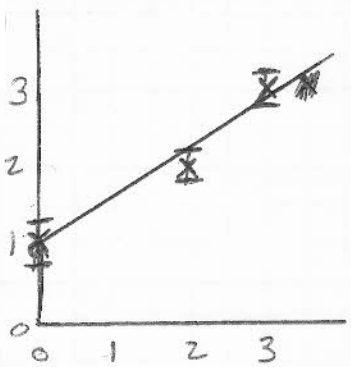
24 slope $= -1.299(\pm 0.001) \times 10^4$

intercept $= 3(\pm 3) \times 10^2$

25



$\sum x_i = 0 + 2 + 3 = 5$

$\sum (x_i^2) = 0^2 + 2^2 + 3^2 = 13$

$\sum y_i = 1 + 2 + 3 = 6$

$\sum x_i y_i = 0 + 4 + 9 = 13$

$$m = \begin{vmatrix} 13 & 5 \\ 6 & 3 \end{vmatrix} \div \begin{vmatrix} 13 & 5 \\ 5 & 3 \end{vmatrix} = (39 - 30) \div (39 - 25)$$

$$= \boxed{0.643}$$

$$b = \begin{vmatrix} 13 & 13 \\ 5 & 6 \end{vmatrix} \div \begin{vmatrix} 13 & 5 \\ 5 & 3 \end{vmatrix} = (78 - 65) \div (39 - 25)$$

$$= \boxed{0.929}$$

$$S_y = \sqrt{\frac{\sum (d_i^2)}{n-2}}$$

$$S_y = \sqrt{\frac{0.0714}{3-2}}$$

$$= 0.27$$

$d_1 = 1 - (0.643 \times 0) - 0.929 = 0.071$

$d_2 = 2 - (0.643 \times 2) - 0.929 = -0.215$

$d_3 = 3 - (0.643 \times 3) - 0.929 = 0.142$

28 Without measuring the response with respect to a known standard, we do not know what the response to an unknown quantity represents.

29 If the negative concentration falls within the known precision of a blank analysis, this is acceptable. If it is outside the known precision, then the determination of the precision is in error.

30 $0.264 - 0.095 = 0.169 = Y$

$y = 0.01630x + 0.0047$

$X = \frac{0.169 - 0.0047}{0.0163} = \boxed{10.1\ \mu g}$

31 $y = 0.61538x + 1.34615$

$y = 2.58$

$x = \frac{2.58 - 1.34615}{0.61538} = \boxed{2.00}$

~~4~~. $s_x = \frac{s_y}{|m|}\sqrt{\frac{1}{k} + \frac{1}{n} + \frac{(y-\bar{y})^2}{m^2\sum(x_i-\bar{x})^2}}$

$s_y = 0.196$ $\quad \bar{y} = (2+3+4+5)/4 = 3.5$

$m = 0.61538$ $\quad \bar{x} = (1+3+4+6)/4 = 3.5$

$k = 1$

$n = 4$ $\quad \sum(x_i-\bar{x})^2 = (1-3.5)^2 + (3-3.5)^2 + (4-3.5)^2 + (6-3.5)^2 = 13$

$s_x = \frac{0.196}{0.61538}\sqrt{\frac{1}{1} + \frac{1}{4} + \frac{(2.58-3.5)^2}{(0.61538^2)(13)}} = \boxed{0.38}$

$\Rightarrow \boxed{2.0 \pm 0.4}$

b. if ~~k~~ $k = 4$

then $s_x = 0.26$ $\quad \boxed{2.0 \pm 0.3}$