

$$1. \quad _ = \{|\} = 0$$

$$\underline{1} = \{ _ | \} = \{ 0 | \} = 1$$

$$\underline{1} = \{1-\} = \{1_0\} = -1$$

$$\begin{array}{|} \text{red} \\ \text{blue} \\ \text{black} \end{array} = \{ \text{—} | \text{—} \} = \{ 0 | 1 \} = \frac{1}{2}$$

$$\begin{array}{|c|} \hline \text{blue} \\ \hline \text{red} \\ \hline \end{array} = \left\{ \begin{array}{|c|} \hline \text{red} \\ \hline - \\ \hline \end{array} \right\} = \left\{ -1 \mid 0 \right\} = -\frac{1}{2}$$

$$= \left\{ \begin{matrix} \text{red} \\ \text{blue} \end{matrix} \middle| \begin{matrix} \text{red} \\ \text{blue} \end{matrix}, \begin{matrix} \text{blue} \\ \text{red} \end{matrix} \right\} = \left\{ -1 \middle| 0, \frac{1}{2} \right\} = -\frac{3}{4}$$

$$= \left\{ \begin{array}{c} \text{red} \\ \text{blue} \\ \text{red} \end{array} \middle| - \right\} = \left\{ -1, -\frac{1}{2} \middle| 0 \right\} = -\frac{1}{4}$$

$$\underline{\underline{1}} = \left\{ \underline{\quad}, \overset{\text{red}}{\underline{\quad}} \mid \overset{\text{blue}}{\underline{\quad}} \right\} = \{0, \frac{1}{2} \mid 2\} = 1$$

$$\underline{\underline{11}} = \{\underline{1} \mid \} = \{1 \mid \} = 2$$

$$(or) = \underline{1} + \underline{1} = 1 + 1 = 2$$

$$\frac{\overline{\underline{\underline{1}}}}{\underline{\underline{\underline{1}}}} = \left\{ \frac{\overline{\underline{1}}}{\underline{\underline{1}}} \right\} = \left\{ \frac{1}{2} \mid 2 \right\} = 1$$

$$\frac{\textcolor{red}{1}}{\textcolor{blue}{1}} = \left\{ \frac{\textcolor{red}{1}}{\textcolor{blue}{1}} \right\} = \left\{ 0 \mid \frac{1}{2} \right\} = \frac{1}{4}$$

$$\begin{aligned} \text{[Diagram]} &= \left\{ \begin{array}{c} \text{[Diagram 1]} \\ \text{[Diagram 2]} \\ \text{[Diagram 3]} \end{array} \right\} = \left\{ \frac{3}{2}, \frac{1}{2}+1, \frac{3}{4}+1+2 \right\} \\ &= \left\{ \frac{3}{2}, \frac{3}{4}+3 \right\} = 2 \end{aligned}$$


$$1 = \{ \perp \} = \{ 1 \} = 2^{\frac{1}{2}} = 2$$

$$\begin{matrix} | \\ \text{red} \\ | \\ \text{blue} \\ | \end{matrix} = \{ -1, \begin{matrix} | \\ \text{blue} \\ | \end{matrix}, \begin{matrix} | \\ \text{red} \\ | \end{matrix} \} = \{ 0, 1, \frac{1}{2} \} = \frac{1}{4}$$

$$\begin{aligned} \underline{\overline{\underline{1}}} &= \left\{ \begin{array}{c} \text{red } 1 \\ \text{blue } 1 \end{array} \middle| \begin{array}{c} \text{red } 1 \\ \text{blue } 1 \end{array}, \begin{array}{c} \text{blue } 1 \\ \text{red } 1 \end{array} \right\} = \left\{ -2 \middle| \frac{1}{2}, 1-1 \right\} \\ &= \left\{ -2 \middle| \frac{1}{2}, 0 \right\} = -1 \end{aligned}$$

a) $\perp = \{ - , \perp \mid \perp \} = \{ 0 , 1 \mid 2 \} = \frac{3}{2}$

b) $\frac{\overline{11}}{\overline{11}} = \left\{ \frac{1}{1}, \frac{1}{1} \mid \frac{11}{11} \right\} = \left\{ 1, \frac{1}{2} \mid 2 \right\} = \frac{3}{2}$

c)  $= \frac{3}{2} + \left(-\frac{3}{2}\right) = 0$

(d) $\begin{array}{|c|} \hline \begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \\ \hline \end{array} = \left\{ \begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \middle| \begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right\} = \left\{ -1, -\frac{3}{4} \middle| 0, -\frac{1}{4} \right\} = -\frac{1}{2}$

$$(e) \quad \text{Diagram 1} = \left\{ \text{Diagram 2}, \text{Diagram 3} \mid \text{Diagram 4}, \text{Diagram 5} \right\} = \left\{ \frac{1}{4}, \frac{1}{4} \mid \frac{1}{2} + 1, 1 \right\} = \left\{ \frac{1}{4} \mid \frac{3}{2}, 1 \right\} = \frac{1}{2}$$

$$(f) \quad \frac{\overline{\text{---}}}{\text{---}} = \left\{ \text{---}, \text{---} \mid \text{---} \right\} = \left\{ 0, 1 \mid \frac{3}{2} \right\} = \frac{5}{4}$$

$$\text{Diagram} = \left\{ \begin{array}{c} \text{---} \\ | \\ \text{---} \end{array}, \begin{array}{c} \text{---} \\ | \\ \text{---} \end{array}, \begin{array}{c} \text{---} \\ | \\ \text{---} \end{array} \middle| \begin{array}{c} \text{---} \\ | \\ \text{---} \end{array}, \begin{array}{c} \text{---} \\ | \\ \text{---} \end{array} \right\} = \left\{ \frac{5}{4}, \frac{1}{2}, \frac{1}{4} + 1 \middle| 2, 1 + \frac{3}{2} \right\} = \left\{ \frac{5}{4}, \frac{1}{2} \middle| 2, \frac{5}{2} \right\} = \frac{3}{2}$$

$$(g) \quad \underline{\underline{1}} = \left\{ \underline{\underline{1}}, \underline{\underline{1}} \mid \underline{\underline{1}}, \underline{\underline{1}} \right\} = \left\{ -1, -\frac{3}{2} \mid 1, 2-1 \right\} = \left\{ -1, -\frac{3}{2} \mid 1 \right\} = 0$$

$$\begin{array}{|c|c|c|} \hline 1 & -1 & 0 \\ \hline \end{array} = 1 + (-1) + 0 = 0$$

$$2.b) \quad \square = \{ | \} = 0$$

$$\square\square = \{ \square\square | \} = \{ 0 | \} = 1$$

$$(i) \quad \square\square\square = \{ \square\square\square | \} = \{ 0+1 | \} = \{ 1 | \} = 2$$

$$\square = \{ | \square \} = \{ | 0 \} = -1$$

$$(ii) \quad \square\square = \{ | \square\square \} = \{ | -1 \} = -2$$

$$(iii) \quad \square\square\square = \{ \square\square\square | \square\square\square \} = \{ -1-1 | 1+1 \} = \{ -2 | 2 \} = 0$$

$$(iv) \quad \square\square\square\square = \{ \square\square\square\square | \square\square\square\square \} = \{ 0-1 | 2+2 \} = \{ -1 | 4 \} = 0$$

$$(v) \quad \square\square\square\square\square = \{ \square\square\square\square\square, \square\square\square\square\square | \square\square\square\square\square \} = \{ 0+0, -1+0 | 3+3 \} \\ = \{ 0, -1 | 6 \} = 1$$