

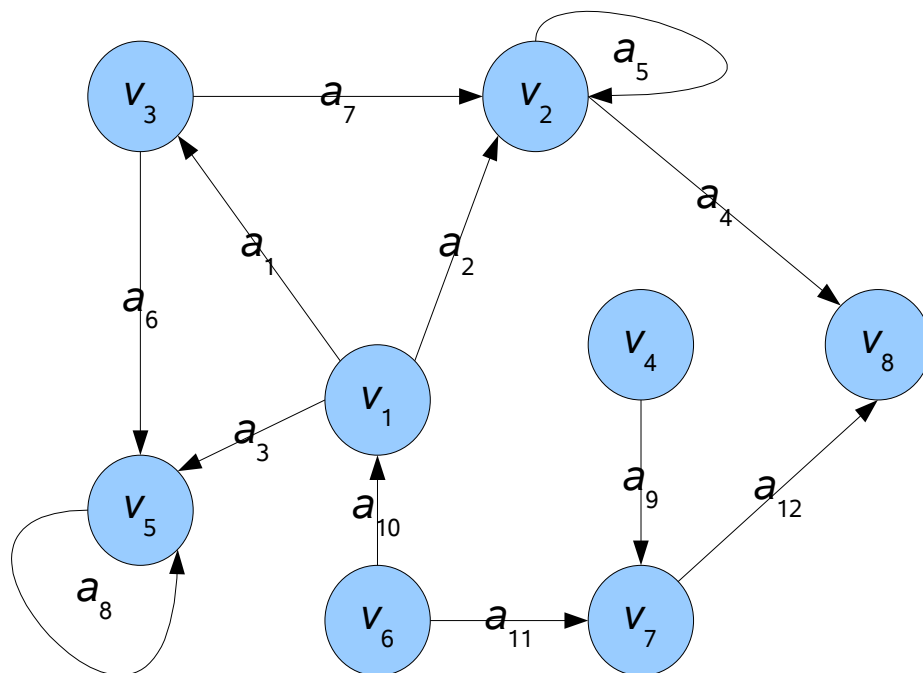
# 「グラフと組合せ」課題2(解答例)

2008/4/21

## 1 グラフの記述(記号表現から幾何学表現へ)

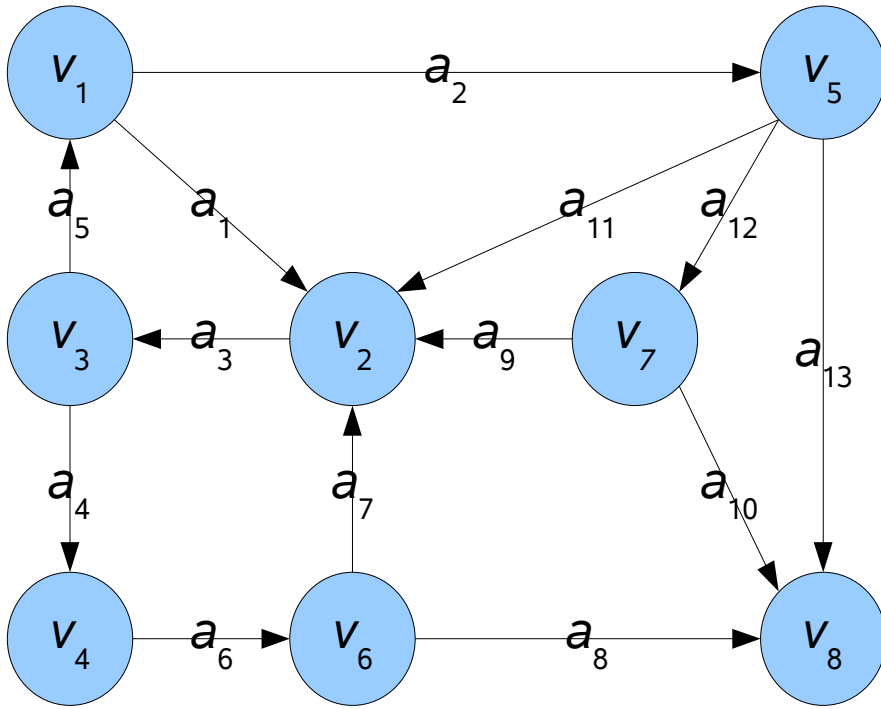
次のグラフを幾何学的に、つまり図形として表記しなさい。

$$\begin{aligned} V &= \{v_1, v_2, v_3, v_4, v_5, v_6, v_7, v_8\} \\ A &= \{a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8, a_9, a_{10}, a_{11}, a_{12}\} \\ \partial^+ a_1 &= v_1, \quad \partial^- a_1 = v_3, \quad \partial^+ a_2 = v_1, \quad \partial^- a_2 = v_2, \\ \partial^+ a_3 &= v_1, \quad \partial^- a_3 = v_5, \quad \partial^+ a_4 = v_2, \quad \partial^- a_4 = v_8, \\ \partial^+ a_5 &= v_2, \quad \partial^- a_5 = v_2, \quad \partial^+ a_6 = v_3, \quad \partial^- a_6 = v_5, \\ \partial^+ a_7 &= v_2, \quad \partial^- a_7 = v_3, \quad \partial^+ a_8 = v_5, \quad \partial^- a_8 = v_5, \\ \partial^+ a_9 &= v_4, \quad \partial^- a_9 = v_7, \quad \partial^+ a_{10} = v_1, \quad \partial^- a_{10} = v_6, \\ \partial^+ a_{11} &= v_6, \quad \partial^- a_{11} = v_7, \quad \partial^+ a_{12} = v_7, \quad \partial^- a_{12} = v_8 \end{aligned} \tag{1}$$



## 2 グラフの記述(幾何学表現から記号表現へ)

次のグラフを記号で表現しなさい。



$$\begin{aligned}
 V &= \{v_1, v_2, v_3, v_4, v_5, v_6, v_7, v_8\} \\
 A &= \{a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8, a_9, a_{10}, a_{11}, a_{12}, a_{13}\} \\
 \partial^+ a_1 &= v_1, \quad \partial^- a_1 = v_2, \quad \partial^+ a_2 = v_1, \quad \partial^- a_2 = v_5, \\
 \partial^+ a_3 &= v_2, \quad \partial^- a_3 = v_3, \quad \partial^+ a_4 = v_3, \quad \partial^- a_4 = v_4, \\
 \partial^+ a_5 &= v_3, \quad \partial^- a_5 = v_1, \quad \partial^+ a_6 = v_4, \quad \partial^- a_6 = v_6, \\
 \partial^+ a_7 &= v_6, \quad \partial^- a_7 = v_2, \quad \partial^+ a_8 = v_6, \quad \partial^- a_8 = v_8, \\
 \partial^+ a_9 &= v_7, \quad \partial^- a_9 = v_2, \quad \partial^+ a_{10} = v_7, \quad \partial^- a_{10} = v_8, \\
 \partial^+ a_{11} &= v_5, \quad \partial^- a_{11} = v_2, \quad \partial^+ a_{12} = v_5, \quad \partial^- a_{12} = v_7, \\
 \partial^+ a_{13} &= v_5, \quad \partial^- a_{13} = v_8
 \end{aligned}$$

(2)