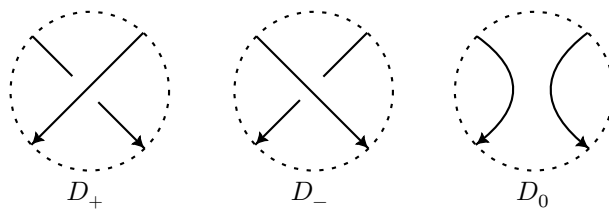# Jones Polynomial

Definition 1:   Recall the properties for Jones polynomial $V(t)$.
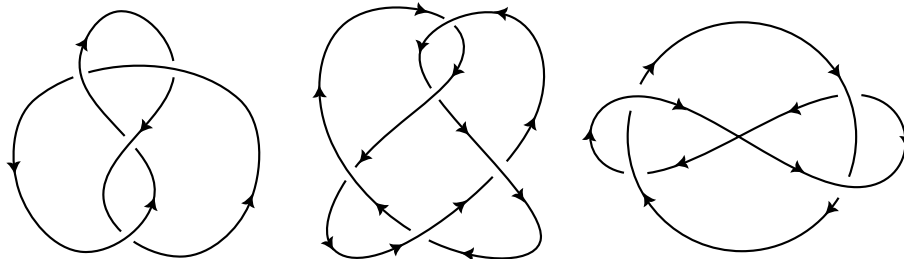
- For c-component trivial link L_c we have

$$V_{L_c}(t) = (-1)^{c-1} \left(\sqrt{t} + \frac{1}{\sqrt{t}} \right)^{c-1}$$

- And in general we have the following skein relation.

$$\frac{1}{t} V_{D_+}(t) - t V_{D_-}(t) = \left(\sqrt{t} - \frac{1}{\sqrt{t}} \right) V_{D_0}(t)$$

Exercise 1:   Calculate the Jones polynomial for the following links. For the last one (Whitehead link) try how does the polynomial change when we flip the orientation of one of the components?

Definition 2:   For links A, B we denote $A \sqcup B$ the link that we get by placing A and B side by side without any overlaps.

Exercise 2:   Let O_c be the trivial link with c components. Prove that for every link D it holds that

$$V_{D \sqcup O_c}(t) = (-1)^c \left(\sqrt{t} + \frac{1}{\sqrt{t}} \right)^c V_D(t)$$