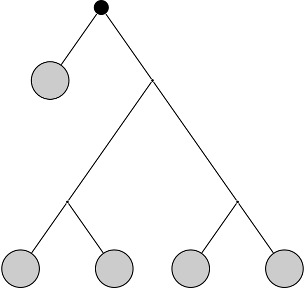
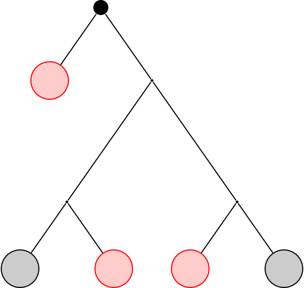
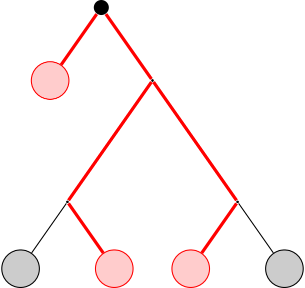
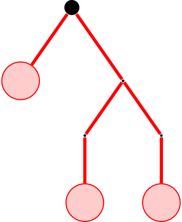
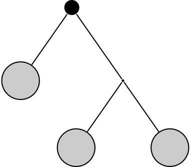
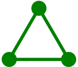
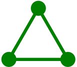


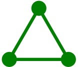


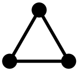
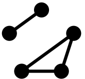


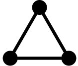
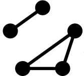


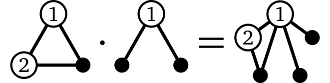


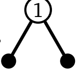
$\mathrm{ex}\Big($  $;$  $\Big) := \max_{\mathcal{G}} \Big\{ \phi\Big($  $\Big) : \phi\Big($  $\Big) = 0 \Big\}.$

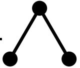
$\mathrm{ex}\Big($  $;$  $\Big) \geq \frac{1}{2},$

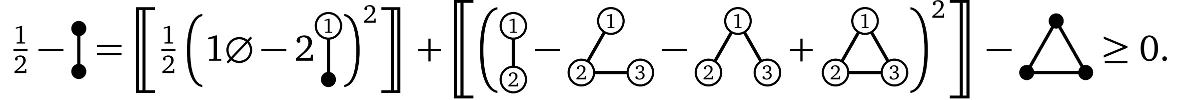
$\phi\Big($  $\Big)\,\phi\Big($  $\Big) = \phi\Big($  $\Big).$

 ·  = ,


1
2
1
1
2

$(1\varnothing - 2$  $)^2 = \varnothing - 4$  $+ 4$  $\geq 0.$

$\left[\!\left[\left(1\varnothing - 2$  $\right)^2\right]\!\right] = \varnothing - 4$  $+ 4$  $\geq 0.$



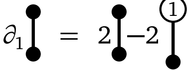
$$[\![f^2]\!] = \langle cc^\top, [\![\mathcal{F}\mathcal{F}^\top]\!]\rangle$$

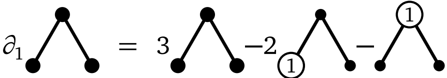
$$\langle M, [\![\mathcal{F}\mathcal{F}^\top]\!] \rangle$$

$H -$  $^{|E(H)|} \geq 0.$

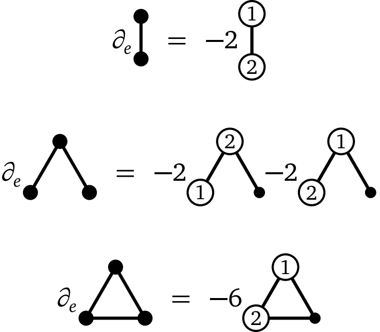
$$\nabla_{v} f(x) = \lim_{h \to 0} \frac{f(x+hv) - f(x)}{h}$$

$$\partial_v H := \lim_{i \to \infty} \frac{(H \text{ density in } (G_i - v)) - (H \text{ density in } G_i)}{i^{-1}}$$

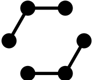
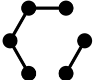
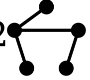


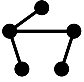
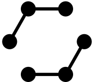
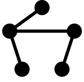
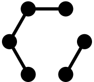


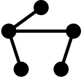
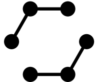
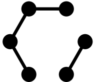
$$\partial_e H := \lim_{i \to \infty} \frac{(H \text{ density in } (G_i - e)) - (H \text{ density in } G_i)}{i^{-2}}$$

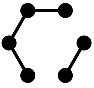
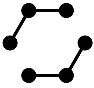
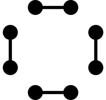


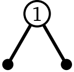
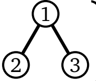
∂_e = −2
1
2
∂_e = −2 −2
2
1
1
2
∂_e = −6
1
2

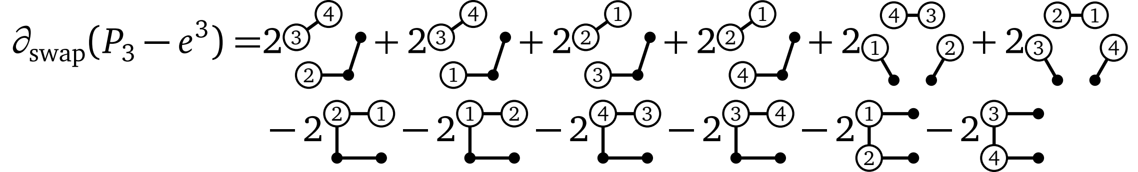
$$\frac{1}{4}\left[\!\!\left[\begin{array}{c}\textcircled{1}\\ | \\ \textcircled{3}\end{array}\partial_{\mathrm{swap}}(P_3 - e^3)\right]\!\!\right] =$$  $+$  $-\,2$  ≥ 0

But  $-$  $=$ SOS ≥ 0 and  $-$  $=$ SOS ≥ 0.

Thus  $=$  $=$ .

This proves  =  ≥  by induction.

 $(\mathcal{G}) := \lim_{i\to\infty} \mathbb{P}\Big[\, \sigma_i \Big($  $\Big)$ is a subgraph of $G_i \mid \sigma_i(1) = 1 \,\Big]$


$\partial_{\text{swap}}(P_3 - e^3) =$