Task 1

1) $\pi_{sname}(\pi_{sid}(\pi_{pid}(\sigma_{color=red}Parts) \bowtie catalog) \bowtie supplier)$

2) $\pi_{sid}\left(\pi_{pid}\left(\sigma_{color=red \vee color=green}Parts\right) \bowtie catalog\right)$

3) $\pi_{sid}\left(\pi_{pid}(\sigma_{color=red}Parts) \bowtie catalog\right) \cup \pi_{sid}(\sigma_{adress=221\ Packer\ Street}\ supplier)$

4) $\pi_{sid}\left(\pi_{pid}(\sigma_{color=red}Parts) \bowtie catalog\right) \cap \pi_{sid}\left(\pi_{pid}\left(\sigma_{color=green}Parts\right) \bowtie catalog\right)$

5) $\pi_{\text{sid,pid}}(\text{Cata}log) \div \pi_{\text{pid}}(\text{Parts})$

6) $\pi_{\text{sid,pid}}(\text{Cata}log) \div \pi_{\text{pid}}(\sigma_{color=red}Parts)$

7) $\pi_{\text{sid,pid}}(\text{Cata}log) \div \left(\pi_{\text{pid}}\left(\sigma_{color=red \vee color=green}Parts\right)\right)$

8) $(\pi_{\text{sid,pid}}(\text{Cata}log) \div \pi_{\text{pid}}(\sigma_{color=red}Parts)) \cup (\pi_{\text{sid,pid}}(\text{Cata}log) \div \pi_{\text{pid}}(\sigma_{color=green}Parts))$

9) $\text{Fir} \leftarrow \text{Cata}log$

$\text{Sec} \leftarrow \text{Cata}log$

$\pi_{\text{Fir.sid,Sec.sid}}\left(\sigma_{Fir.pid=Sec.pid \wedge Fir.cost>Sec.cost \wedge Fir.sid \neq Sec.sid}(Fir \times Sec)\right)$

10) $\text{Fir} \leftarrow \text{Cata}log$

$\text{Sec} \leftarrow \text{Cata}log$

$\pi_{\text{Fir.pid}}(\sigma_{Fir.pid=Sec.pid \wedge Fir.sid \neq Sec.sid}(Fir \times Sec))$

Task 2

1) Find the names of suppliers supplying some red part for less than 100 dollars.
2) Find the names of suppliers supplying some red part for less than 100 dollars **and** some green part for less than 100 dollars.
3) Find the *sids* of suppliers supplying some red part for less than 100 dollars **and** some green part for less than 100 dollars
4) Find the names of suppliers supplying some red part for less than 100 dollars **and** some green part for less than 100 dollars.