Question 1

a.
$$\text{RedBooks} \leftarrow \sigma_{(\texttt{color = "red"})}(\text{Book})$$
$$\text{A} \leftarrow \text{RedBooks} \bowtie_{(\texttt{Book.ISBN = Distribute.ISBN})} \text{Distribute}$$
$$\text{Calgary} \leftarrow \sigma_{(\texttt{sname = "Calgary"})}(\text{A})$$
$$\text{Result} \leftarrow \pi_{(\texttt{name, city})}(\text{A - Calgary})$$

b.
$$\text{Schools} \leftarrow \sigma_{(\texttt{city = "Paris"})}(\text{School})$$
$$\text{A} \leftarrow \text{Schools} \bowtie_{(\texttt{sname = name})} \text{Distribute}$$
$$\text{B} \leftarrow \text{A} \bowtie_{((\texttt{pname = name}) \text{ and } (\texttt{Publisher.city = "London"}))} \text{Publisher}$$
$$\text{Result} \leftarrow \pi_{(\texttt{director})}(\text{B})$$

c.
$$\text{RomePublishers} \leftarrow \sigma_{(\texttt{city = "Rome"})}(\text{Publisher})$$
$$\text{A} \leftarrow \text{RomePublishers} \bowtie_{((\texttt{pname = name}) \text{ and } (\texttt{sname = "Toronto"}))} \text{Distribute}$$
$$\text{B} \leftarrow \text{A} \bowtie_{(\texttt{sname = School.name})} \text{School}$$
$$\text{Result} \leftarrow \pi_{(\texttt{School.name})}(\text{B})$$

d.
$$\text{CalgarySchools} \leftarrow \sigma_{(\texttt{city = "Calgary"})}(\text{School})$$
$$\text{A} \leftarrow \text{CalgarySchools} \bowtie_{(\texttt{sname = name})} \text{Distribute}$$
$$\text{B} \leftarrow \text{A} \bowtie_{(\texttt{Distribute.ISBN = Book.ISBN})} \text{Book}$$
$$\text{Titles} \leftarrow \pi_{(\texttt{title})}(\text{B})$$
$$\text{Result} \leftarrow f_{\texttt{COUNT title}}(\text{Titles})$$

e.
todo

Question 2

a.
todo

b.
todo

c.
todo

d.
todo

e.
todo