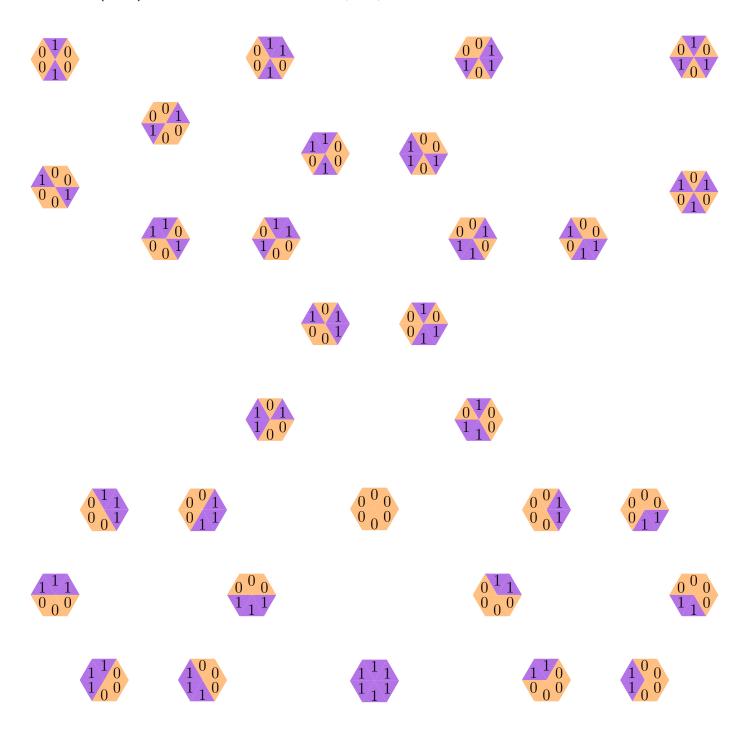
Supplemental material for Visual Algebra (Math 4120), \overline{HW} 10

 $\#1(\mathbf{a},\mathbf{c})$: Action graph of $D_6 = \langle r, f \rangle$ acting on 31 "binary hexagons."



 $\#1(\mathbf{b})$: Fixed point table of D_6 acting on "binary hexagons."

	$\begin{array}{c} 0 & 0 \\ 0 & 0 \end{array}$	$\frac{1}{1}\frac{1}{1}\frac{1}{1}$	$\begin{matrix} 0 & 1 & 0 \\ 1 & 0 & 1 \end{matrix}$	$\begin{array}{c} 1^{0}1 \\ 0_{1} 0 \end{array}$	$\begin{smallmatrix}0&0&0\\1&&1\end{smallmatrix}$	$\begin{smallmatrix}0&0&1\\0&1&1\\0&1&1\end{smallmatrix}$	$\begin{smallmatrix}0&1\\1\\0&0&1\end{smallmatrix}$	$\begin{bmatrix}1&1\\0&0\end{bmatrix}$	$\begin{array}{c} 1 & 1 & 0 \\ 1 & 0 & 0 \end{array}$	$\begin{array}{c} 1 & 0 \\ 1 & 1 \end{array}$	$\begin{smallmatrix}0&0&0\\1&1&0\end{smallmatrix}$	$\begin{smallmatrix}0&0&0\\0&1&1\end{smallmatrix}$	$\begin{smallmatrix}0&0\\1\\0&0\end{smallmatrix}$	$\begin{smallmatrix}0&1\\0&1\\0&0\end{smallmatrix}$	$\begin{array}{c} 1 & 0 \\ 0 & 0 \end{array}$	$\begin{array}{c} 1 & 0 & 0 \\ 1 & 0 & 0 \end{array}$
1																
r																
r^2																
r^3																
r^4																
r^5																
f																
rf																
r^2f																
r^3f																
r^4f																
$r^5 f$																

 $\#1(\mathbf{b})$: Fixed point table of D_6 acting on "binary hexagons" (contin.)

1

r

 r^2

 r^3

 r^4

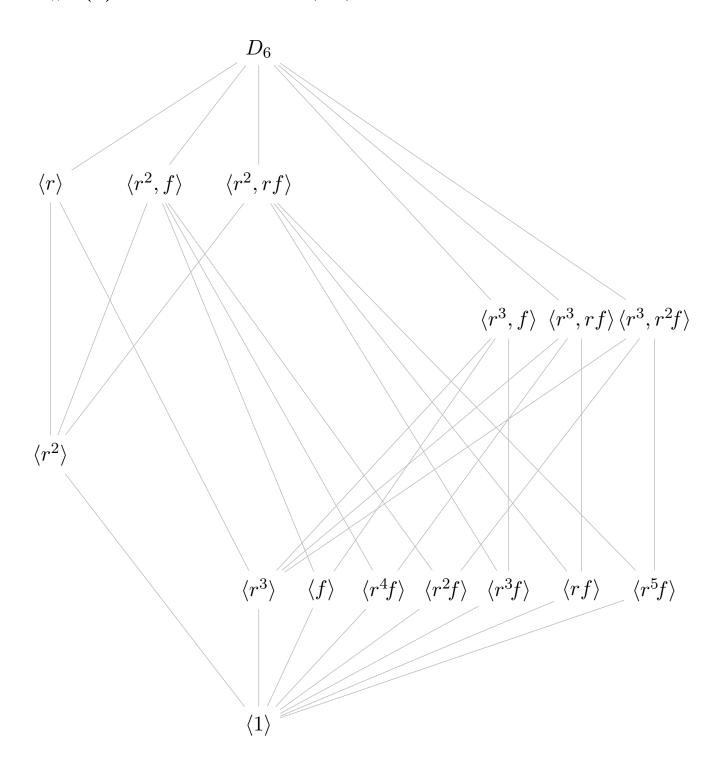
 r^5

f

rf

	$\begin{smallmatrix}1^{0}\\0\\0\end{smallmatrix}$	$001 \\ 100$	$\begin{smallmatrix}1&0&0\\0&1&1\end{smallmatrix}$	$\begin{smallmatrix}0&0&1\\1&0&1\end{smallmatrix}$	$\begin{smallmatrix}0&1&1\\0&1&0\\&1&0\end{smallmatrix}$	$\begin{smallmatrix}1&1&0\\0&0&1\end{smallmatrix}$	$\begin{matrix}1^{0}1\\1_{0}^{0}\end{matrix}$	$\begin{smallmatrix}0&1&0\\1&1&0\end{smallmatrix}$	$\begin{smallmatrix}0&1&0\\0&1&1\\0&1&1\end{smallmatrix}$	$\begin{smallmatrix}1&0&1\\0&&1\\0&&1\end{smallmatrix}$	$\begin{matrix}0&1&1\\1&0&0\end{matrix}$	$\begin{smallmatrix}1&1&0\\0&1&0\end{smallmatrix}$	$\begin{array}{c} 1 & 0 \\ 1 & 0 \\ 1 & 0 \end{array}$	$\begin{smallmatrix}0&0&1\\1&1&0\end{smallmatrix}$
•														
•														

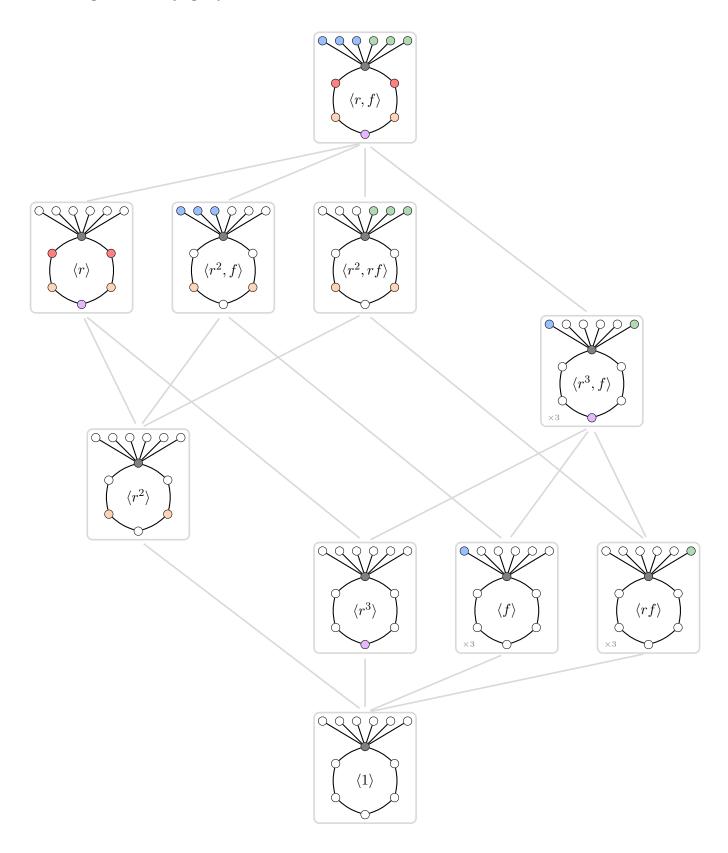
#4(a): Action graph of $D_6 = \langle r, f \rangle$ acting on its subgroups by conjugation.



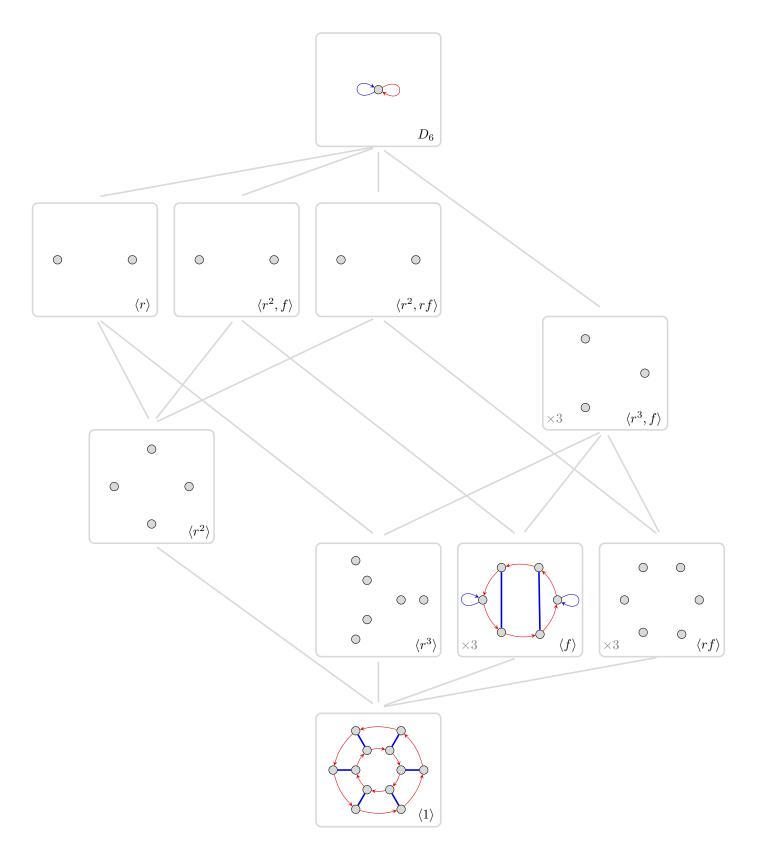
 $\#4(\mathbf{b})$: Fixed point table of D_6 acting on its subgroups by conjugation.

	D_6	$\langle r \rangle$	$\langle r^2, f \rangle$	$\langle r \rangle$	$r^2, rf \rangle$	$\langle r^3, f$.)	$\langle r^3, rf \rangle$	$\langle r^3, r^2 \rangle$	$^{2}f\rangle$	$\langle r^2 \rangle$	$\langle r^3 \rangle$	$\langle f \rangle$	$\langle r^2 f \rangle$	$\langle r^4 f \rangle$	$\langle rf \rangle$	$\langle r^3 f \rangle$	$\langle r^5 f \rangle$
1																		
r																		
r^2																		
r^3																		
r^4																		
r^5																		
f																		
rf																		
$r^2 f$																		
r^3f																		
r^4f																		
$r^5 f$																		

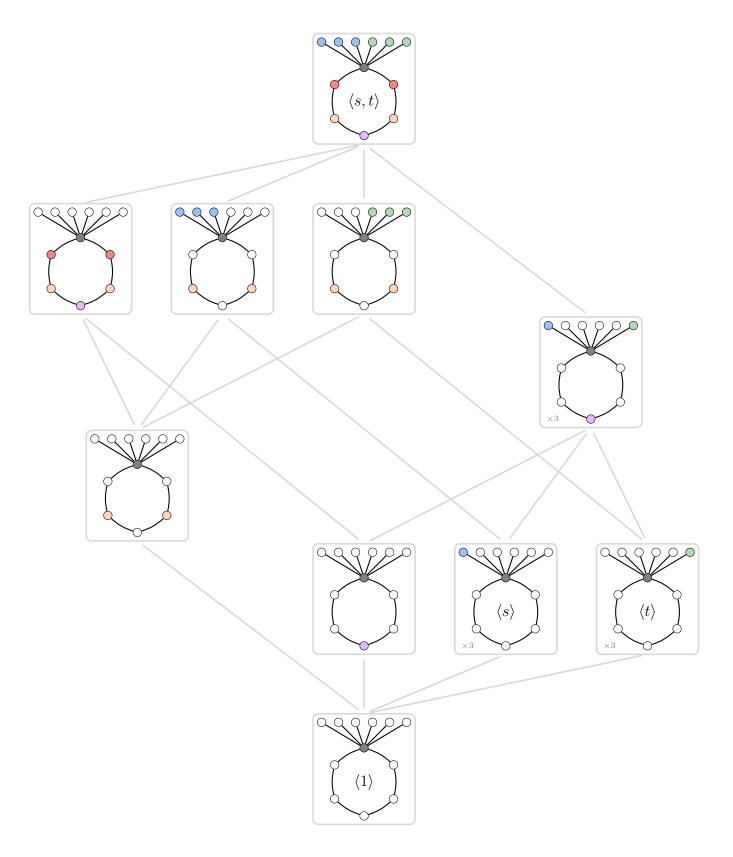
#5(a): The conjugacy poset of $D_6 = \langle r, f \rangle$. Each node is labeled with the cycle graph of one of the subgroups in that conjugacy class. The size of each non-singleton conjugacy class is denoted in the lower-left corner of each box.



#5(a): The action graph poset of $D_6 = \langle r, f \rangle$, constructed by collapsing its Cayley graph by right cosets of its subgroups.



 $\#\mathbf{5}(\mathbf{b})$: The conjugacy poset of $D_6 = \langle s, t \rangle$, where s = f and t = fr. Each conjugacy class is labeled with a subgroup that contains it.



#5(b): The action graph poset of $D_6 = \langle s, t \rangle$, where s = f and t = fr, constructed by collapsing its Cayley graph by right cosets of its subgroups.

