(3) We have

$$cb^{-1}e^{-1}a^{-1} = b^{-1}e^{-1}a^{-1}c = w_1$$

$$bda^{-1}f^{-1} = da^{-1}f^{-1}b = w_2$$

$$d^{-1}c^{-1}f^{-1}e^{-1} = c^{-1}f^{-1}e^{-1}d^{-1} = w_3$$

So gluing w_1, w_2 along c gives

$$b^{-1}e^{-1}a^{-1}cc^{-1}f^{-1}e^{-1}d^{-1} = b^{-1}e^{-1}a^{-1}f^{-1}e^{-1}d^{-1}$$

Gluing this with w_2 along b gives

$$\underbrace{da^{-1}f^{-1}b}_{w_2}\,\underbrace{b^{-1}e^{-1}a^{-1}f^{-1}e^{-1}d^{-1}}_{w_1 w_3} =$$

$$= da^{-1}f^{-1}e^{-1}a^{-1}f^{-1}e^{-1}d^{-1}$$

Now let $h = a^{-1}f^{-1}e^{-1}$, we then get

$$dhhd^{-1} = d^{-1}dhh = hh$$

So the surface is $\mathbb{RP}^2$

6.) $\mathbb{R}P^2$ is one-sided in $\mathbb{R}^3$,
since contains a Möbius strip.
So there is a path in it
where you can get from what
seems to be one side of the
surface to the other
and thus from any to object of
the world to the other i.e.
"have everything".