Conclusion

**Part 1:**

The observable intensity of light was decreased, as expected, while looking at the blue sky through a polarizing filter. There were only slight variations in the intensity as the filter was rotated. Because the incoming light was not polarized, the intensity was theoretically cut in half regardless of transmission axis angle.

Reflected polarized rays were observed bouncing off a shiny surface. These reflections were easily eliminated when the polarizing filter’s transmission axis was set perpendicular to the polarized light and was seemingly enhanced when set parallel.

**Part 2:**

The power, which is proportional to intensity, transmitted through a polarizing filter was found to have a linear ( relationship to , where represents angular difference between the axis of the polarized light and transmission axis of the polarizing filter. It was seen that power was more easily transmitted when the polarizing filter axis was parallel to the polarized light, and the least amount of power was transmitted when the polarizing filter axis was perpendicular to the polarized light. This behavior accurately supports the law of Malus.

**Part 3:**

Not assigned.

**Part 4:**

The principle of Brewster’s angle was used to find the index of refraction of a microscope slide. The value was experimentally found to be 1.73 with a 9% uncertainty. This value was compared to another lab group’s value, 1.54, and found to have a 11% difference. If this other group’s value was taken as the accepted value, then the percent difference is not within the margin of error, however, it is very close.

The reflected light never fully disappeared in this portion of the experiment, hence, the value for Brewster’s angle was approximated at the point were the light was the dimmest. The experiment could be improved by positioning the surface which captures the reflected beam at a further distance away from the apparatus. By doing so, the captured light would have a longer arc length and a more precise point of maximum dimness could be determined.