Physics 103
General Astronomy
HW #10
Due: Mar 28

Questions:

1. For each of the following images: describe the feature; determine by what process it was formed and whether the process is exogenic or endogenic. Mention any clues in the image that tell you what planetary body the image is on and name that body if you can.

A. The arrow is pointing to a circular feature with a central peak that is embedded in a teardrop-shaped, raised feature. The circular feature is perfectly circular and the central peak suggests it is an impact crater (which is an exogenic process). The teardrop-shaped island is indicative of erosion (endogenic process). Only one planet in the solar system has erosion and lots of craters (I count 5 in this image): Mars.

B. The arrow is pointing to a perfectly circular feature that is surrounded by a wavy circular line. The feature has a central peak, which is suggestive of impact cratering (exogenic). The wavy line is strange for an ejecta blanket, and appears as though water was involved. This is a “splosh” crater, which is found only on Mars.
C. This image shows many light-colored, parallel, nearly straight lines. A second set of fainter lines runs perpendicular to the first set. That they come in sets and are nearly straight, suggests that these lines were formed by tectonics, an endogenic process. There aren’t very many clues in this image to suggest where it is, but the same image was shown in class. This is Venus.

2. For the following image, describe all the features in it and speculate on how they formed. Hint: some of the features you have seen before and some you haven’t.

The background of this image is composed mostly of lines - lots of lines - running in many different directions. Some of the lines are raised above the background. Some of the lines form parallel sets. The lines are mostly straight with a small bit of waviness. The straightness and the fact that they sometimes appear in sets suggest that the lines are tectonic in origin. Also prominent are several quasicircular features. Some are nearly circular and some are have almost rounded angles. The lines from the background continue across some of the quasicircular features. Because they are quasicircular, this suggests they may be volcanic in origin. See lecture #11 to see these features again.
Other acceptable answers given by students:

1.A. Dark sinuous thick lines form a teardrop shape around a circular object. There are two other large circular objects with dark edges. The process that is was formed by seems to be erosion which is an endogenic process. The picture could possible be Mars because it looks like there is also a “splosh” crater in the lower right-hand corner, and those are found only on Mars.
Teacher’s note: That isn’t a splosh crater in the image, but the description is so good that this would receive full credit.

The picture has darker areas flowing over a lighter area. The shape of the flowing forms is a teardrop. There are also visible circular indentions. The flowing is erosion because of the teardrop shape, which is endogenic. There are craters, which are exogenic. Earth and Mars are the only two planets that have erosion on them and because there are craters, this is a picture of Mars

A teardrop shape that appears to be at a higher elevation than the surrounding area. At the bottom of the teardrop is a perfect circular depression with a high peak in the center. Craters (exogenic) & erosion (endogenic). Mars.
Teacher’s note: Good description. The only problem is that no reasons are given for the image being Mars.

1.B. This is a circular object with a central peak and an outer edge. It has another quasicircular outer edge that is ridged. This is an impact crater on Mars because Mars is the only planet to have “splosh” craters. This is an example of an exogenic process.

circular
central peak
ejecta blanket
= crater
older surface
exogenic
watery looking ejecta
Mars
Teacher’s note: This is pretty good, full credit, but complete sentences would be nice.

It is a circular hole with a ledge that outlines it. In the middle is a tiny rise and on the outside is a rugged outline like the corona of the sun or waves on a beach. It is a crater and exogenic on the planet Mars because of the watery edges.
Teacher’s note: This could use a bit more, like that the tiny rise is the central peak and that the craters are “splosh” craters, but it is still one of the best answers.

1.C. Straight and some curvy lines, all in groups. They are thick and white but also seem to be perpendicular with smaller/thinner and fainter white lines. This process was formed by tectonics which is an endogenic process. I don’t know of any clues that give away the planet the image is from.