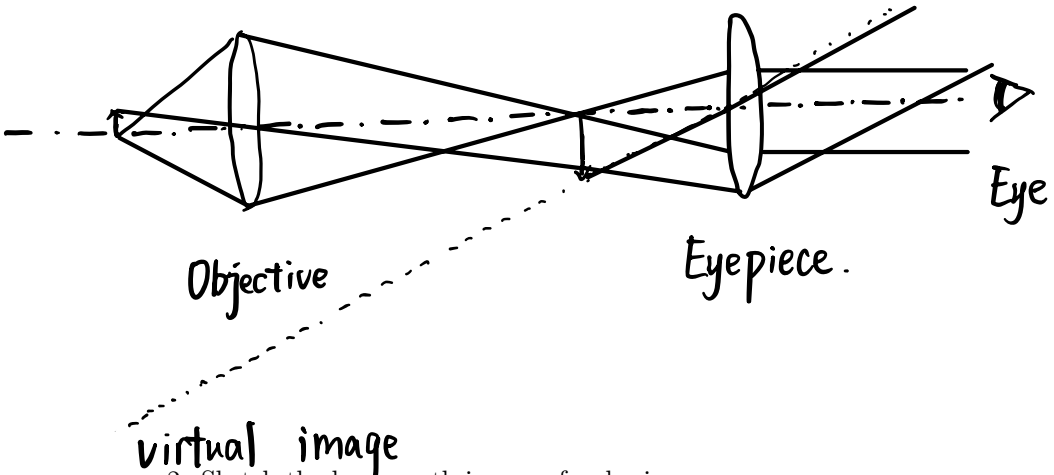
Upload your finished worksheet as a single pdf file on moodle before the next class session in order to get participation credit.
Try to keep your books closed. Discuss with your fellow students to come to an answer.
Show your work.

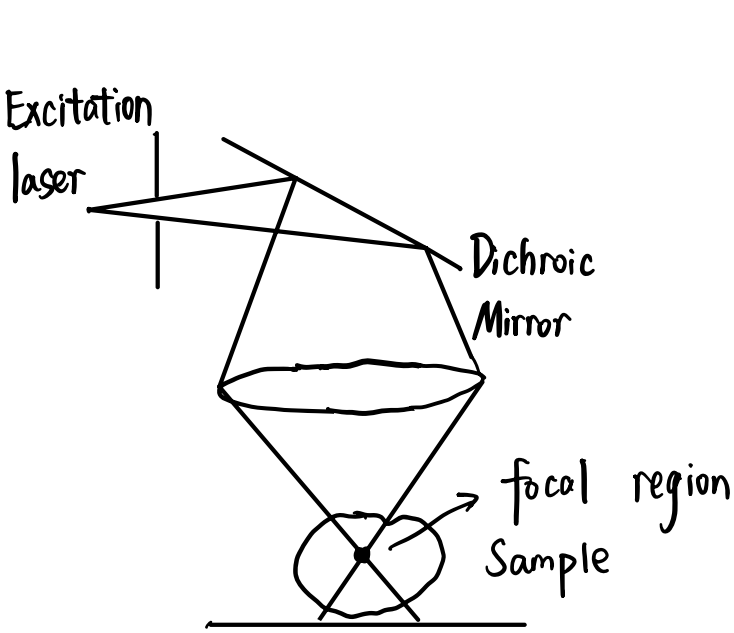
Name:_____

1. Sketch the beam path in a microscope

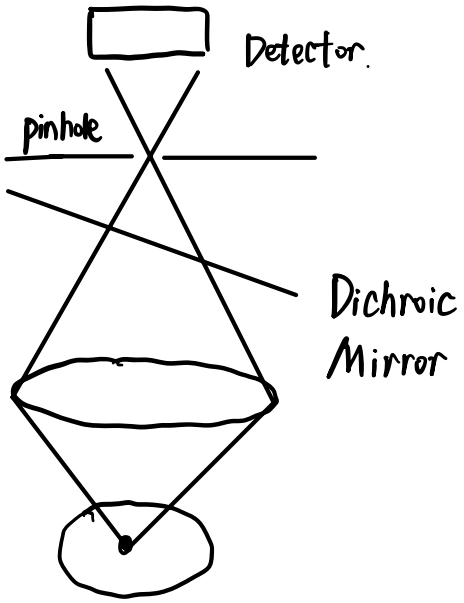
① Objective gets it closer & larger
② Eyepiece gets the angle of view wider.



2. Sketch the beam path in a confocal microscope

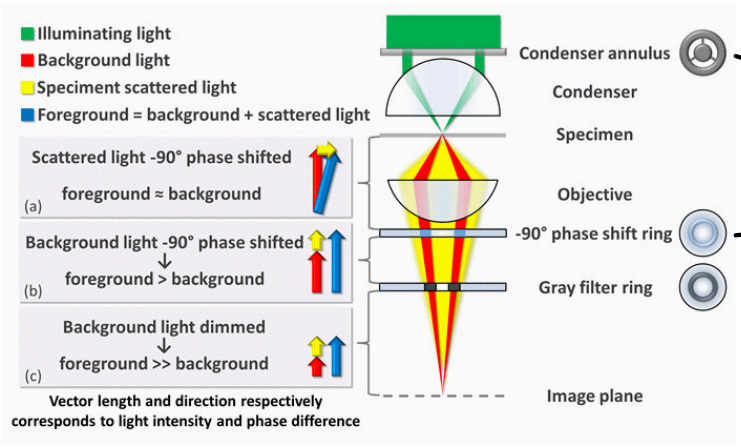


Excitation



Emission.

3. Where would you put apertures and phase plates for phase contrast microscopy. Sketch again.



From Wikipedia

→ Annular Aperture

→ Phase Plate.

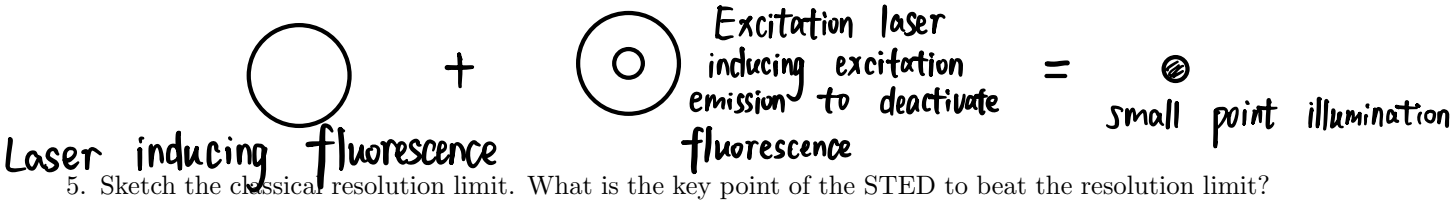
Note: Diffraction by sample will introduce a ① 90° of intrisic phase shift plus a ② depth & tansparancy- dependent phase shift. The -90° phase shift ring is used to compensate ①.

4. Summarize the key concepts for the STED microscope.

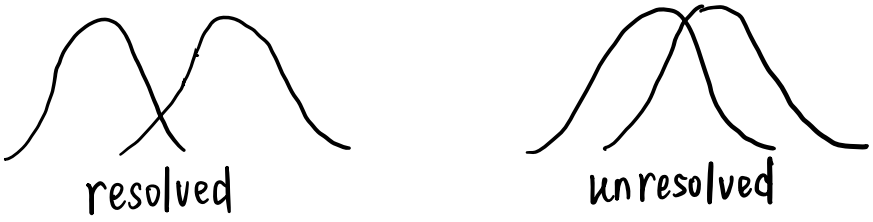
① Fluorescence Microscopy Basis

② Donut shape excitation laser to deactivate the fluorescence. One small region illuminated at one time.

③ Point-by-point scanning is required to form a complete image.



5. Sketch the classical resolution limit. What is the key point of the STED to beat the resolution limit?



↓ STED

resolved.

The step of using donut-shape excitation laser to deactivate the fluorescence by inducing excitation emission.

The End.