1) Provide a complete and correct synthesis of the molecule below using molecules containing three carbons or fewer. (5 points)

```
  H
  |  H
  | /  
```

2) Provide the major product(s) for the reactions below. (3 points)

```
  NH₂ + NaSH → DMF
  OTs + CsBr → CH₃OH
  Br + NaCN → acetone
```

3) Rank the following in order of SN1 reactivity. (1 = most reactive).
   a) substrate (1 point)

```
  OTf  Br  OTf  F
  \H/  \H/  \H/  \H/
```

   b) solvent (1 point)

```
  O  H  O
```