

8. Kelly's utility function is given by $U = 5X + 2Y$, where $MU_X = 5$ and $MU_Y = 2$.
- What is MRS_{XY} ?
 - What is MRS_{XY} when $X = 1$ and $Y = 5$? When $X = 2$ and $Y = 2.5$?
 - Draw a sample indifference curve.
 - Relate the shape of Kelly's indifference curves to her marginal rate of substitution.
 - Given the utility function in this problem, show that the marginal utilities are as given using calculus.
 - Determine whether or not Kelly's preferences could also be represented by this utility function:
 $U = (5X + 2Y)^{0.5}$.
 - Is the Lagrangian approach an appropriate way to solve for an optimum given this utility function? Why or why not?
 - What will Kelly's final optimum look like? (Note that without prices, you cannot solve precisely. This is therefore asking you to describe the characteristics of an equilibrium for her.)