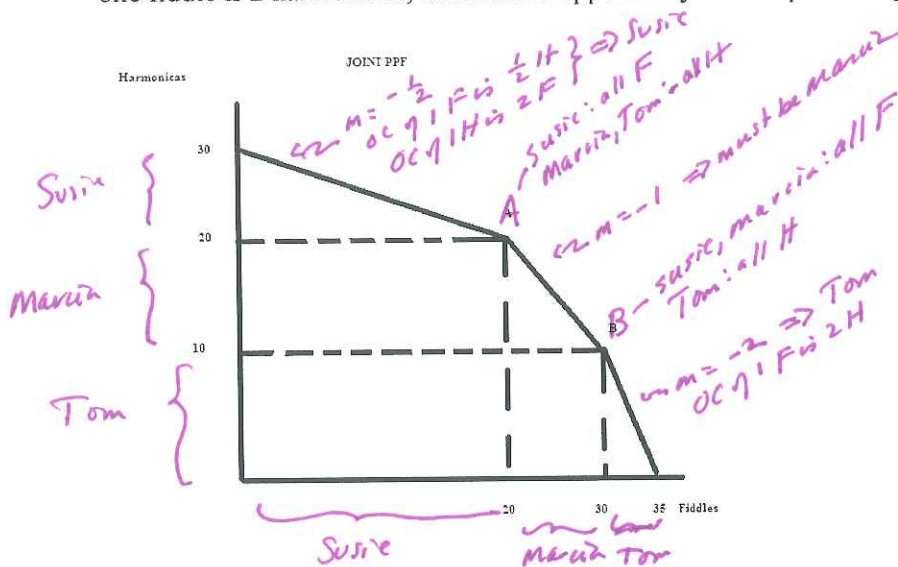
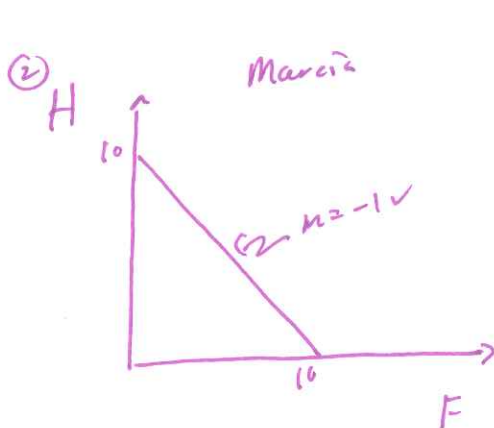


Please write your answers neatly and legibly.

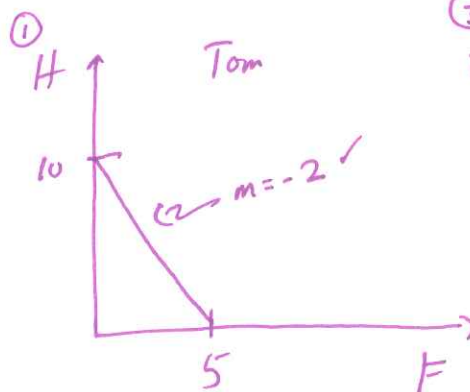
1. Marcia, Tom and Susie all have linear production possibility frontiers in the productions of fiddles and harmonicas. The graph below provides their joint production possibility frontier (PPF). You are told that Marcia's opportunity cost of producing one fiddle is 1 harmonica, Tom's opportunity cost of producing one fiddle is 2 harmonicas, and Susie's opportunity cost of producing one harmonica is 2 fiddles.



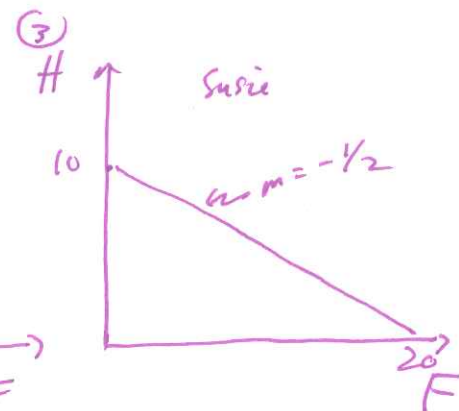
a. (3 points) In the space below draw three graphs. In the first graph draw Marcia's PPF based on the above information. In the second graph draw Tom's PPF based on the above information. And in the third graph draw Susie's PPF based on the above information. Label each graph completely and clearly, including a label for whose PPF it is, for full credit. In your graphs, measure harmonicas on the vertical axis and fiddles on the horizontal axis.



OC of 1 F is 1 H
 OC of 1 H is 1 F



OC of 1 F is 2 H
 OC of 1 H is 1/2 F



OC of 1 F is 1/2 H
 OC of 1 H is 2 F

b. (1 point) At point A in the above graph, determine the number of Harmonicas and Fiddles produced by Tom, Marcia, and Susie. Enter these quantities in the table below.

At point A:	Number of Fiddles Produced By	Number of Harmonicas Produced By
Tom	0	10
Marcia	0	10
Susie	20	0

c. (1 point) At point B in the above graph, determine the number of Harmonicas and Fiddles produced by Tom, Marcia, and Susie. Enter these quantities in the table below.

At point B:	Number of Fiddles Produced By	Number of Harmonicas Produced By
Tom	0	10
Marcia	10	0
Susie	20	0

d. (3 points) For each of the combinations below determined whether the point is feasible and efficient (i.e., it is on the joint PPF), inefficient (i.e., it lies inside the joint PPF), or it is infeasible (i.e., it lies beyond the joint PPF).

i. (18 fiddles, 21 harmonicas) on PPF; feasible & efficient ←

ii. (22 fiddles, 16 harmonicas) inefficient; inside the PPF

iii. (33 fiddles, 3 harmonicas) inefficient; inside the PPF

PPF equations: For $20 \leq H \leq 30 \Rightarrow H = 30 - \frac{1}{2}F$
 if $F = 18 \Rightarrow H = 30 - \frac{1}{2}(18) = 30 - 9 = 21 \Rightarrow$ on PPF

For $10 \leq H \leq 20 \Rightarrow H = 40 - F$ we know $(F, H) = (20, 20)$ & $(30, 10)$ are on this line. Use one pt to find b : $20 = b - 20 \Rightarrow b = 40$
 $H = 40 - F$
 if $F = 22 \Rightarrow H = 40 - 22 = 18$ so $(22, 16)$ is inside the PPF

For $0 \leq H \leq 10 \Rightarrow H = 70 - 2F$ we know $(F, H) = (30, 10)$ & $(35, 0)$ are on this line. Use one pt to find b : $10 = b - 2(30) \Rightarrow b = 70$
 $H = 70 - 2F$. If $F = 33 \Rightarrow H = 70 - 2(33) = 70 - 66 = 4$ so $(33, 3)$ is inside the PPF

e. (2 points) Using the number line approach as delineated in class, provide an image for the acceptable range of trading prices for one harmonica in terms of fiddles for Marcia, Tom and Susie. In the diagram be sure to include arrows indicating each person's perspective.

