ECON 20110 PSET 2

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1

a

Let y_1 denote cotton threads, such that $y_1 \in Y$. Let x_1 denote raw cottoon such that $x_1 \in C$ and $x_2 \in L$. Therefore we see that the production possibility set that describes Firm 1's technology is $F_1 \subseteq X \times Y$ where $F_1 = \{(x_1, x_2, y_1) \in \mathbb{R}^2_+ \} | \, y_1 \leq x_1^{\frac{1}{2}} x_2^{\frac{1}{2}} \}$.

b

Let y_1 and Y be denoted the same as before. Let $y_2 \in P$ where y_2 is the number of pillow cases and P is the set of all pillow cases. Thus, the production possiblity set denoted by F_2 and is $F_2 \subseteq Y \times P$, where $F_2 = \{(y_1, y_2) \in \mathbb{R}^2_+ \, | \, y_2 \leq y_1^{\frac{1}{2}} \}$.

c

Logically, this would be the union of these sets. Since no goods are being produced, we do not have to be concerend about any new goods and be soley be concerned about the inputs. Let F_3 denote Firm 3's production set. We can see that $F_3 = F_2 \cup F_1$ and $F_3 = \{(x_1, x_2, y_1, y_2) \in \mathbb{R}^4_+ \, | \, y_1 \leq x_1^{\frac{1}{2}} x_2^{\frac{1}{2}}, y_2 \leq y_1^{\frac{1}{2}} \}$.

2

a

3

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5