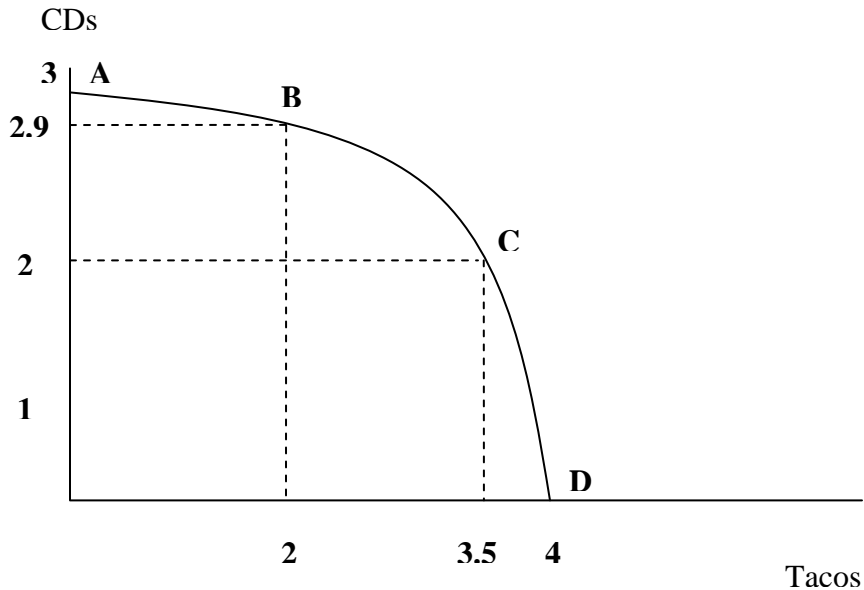


Consider the following PPF

**D**



1. Describe marginal costs along this PPF

*As the production of tacos increases, the MC of tacos also increases. As the production of CDs increases, the MC of CDs also increases. Marginal Costs are positive and increasing for both goods, and this reflects the fact that some of our resources are better suited for producing tacos, and some are better suited for producing CDs (there are Taco geniuses and CD geniuses).*

2. What is the set of feasible choices in this graph? Is it convex?

*The feasible set of choices are all of the points on or inside of the PPF. This is a convex set.*

3. What production choices satisfy productive efficiency?

*All the points on the PPF. No other points satisfy productive efficiency.*

4. Calculate the opportunity cost (OC) of going from points A to B

*When we go from point A to point B, we gain two additional Tacos. The opportunity cost of this is one tenth of a CD.*

5. Calculate the OC of going from point A to point C

*We we go from point A to point C, we gain 3.5 tacos. The opportunity cost of this is 1 CD.*

6. Calculate the marginal costs of each item between points A&B, B&C, and C&D.

Points	MC of Tacos	MC of CDs
A-B	1/20 CD	20 Tacos
B-C	0.9/1.5 CDs	1.5/0.9 Tacos
C-D	4 CDs	1/4 Taco

7. Graph marginal costs in the above table. How are they related?

*You should be able to graph these pictures and see how they are related!*

8. Understand how the PPF relates to the various concepts we have discussed in class (scarcity, tradeoffs, opportunity cost).

*The existence of the PPF shows scarcity—points beyond the PPF are not feasible. As we move along the PPF, to get more of one good we must give up another good; we face a tradeoff. The severity of this tradeoff is captured by the Opportunity Cost of moving between different points on the PPF. By the assumption of Ceteris Paribus, we know that the OC of getting more of a good is getting less of the other good. How the tradeoff changes as production of a good increases is determined by changes in the Marginal Cost of goods along the PPF. Since marginal costs are increasing, the set of feasible choices here is convex, and we know that some resources are best suited for the production of one particular good (eg, there are taco geniuses).*

### **Efficiency.**

1. Answers to odd numbered ones are on <http://www.aw-bc.com/parkin/> Click on “Microeconomics Free website” (under 8th edition version of the book), then “Student Resources.” Then click on “solutions to odd numbered problems.”

2. Marginal costs should not fall; instead they should rise as production increases. When we produce our first few units of  $x$ , we will do so by choosing the resources most suited to producing  $x$  (if we didn't do this, we would end up inside of the PPF). As production of  $x$  grows, we must turn to less-suitable resources, and so the marginal cost of  $x$  should rise. Similarly, the marginal benefit of  $x$  should fall because we like variety. So the set up of the problem is admittedly strange.

*If Marginal Benefit rises, and marginal cost falls, it is not clear what level of  $x$  will be produced—but the country will either produce no  $x$  at all or as much  $x$  as possible. The point where the curves intersect no longer shows the best point, but rather the worst—at the intersection, every unit of  $x$  produced so far has been worth less than its costs!*

3. If Rafiki is not made better off from money, but Jeb and Rachel both are, then Rafiki will never eat any money in a Pareto Efficient outcome. But if Rafiki, Jeb and Rachel are all better off from getting (or eating) money, than any full division of the money between them (where all \$100 is split among them) is Pareto Efficient.

### Specialization and Trade.

Suppose there are two countries, England and Portugal. Each country produces wine and cloth. (This is a real example of specialization and trade that comes from David Ricardo, the great economist who first explored the concept of Comparative Advantage in the 1800s). If England produces no wine, it can produce 10 yards of cloth. England's marginal cost of a yard of cloth is constant and equals one-half a gallon of wine. If Portugal produces no wine, then Portugal can produce 6 yards of cloth. If Portugal produces no cloth, it can produce 4 gallons of wine. The marginal cost of each gallon of wine in Portugal is constant.

1. Does either country have an absolute advantage?

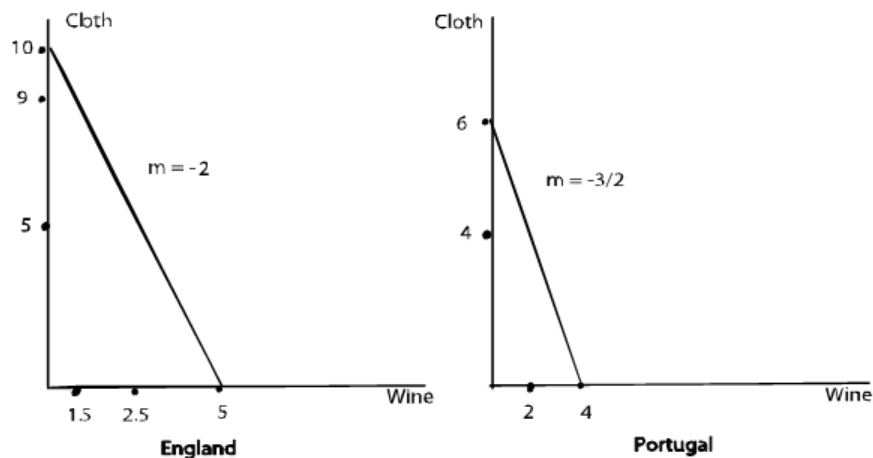
*England has an absolute advantage*

2. Calculate each countries marginal cost of producing each good.

*For England, the MC of a yard of cloth is  $\frac{1}{2}$  gallon of wine and the MC of wine is 2 yards of cloth. For Portugal, the MC of a yard of cloth is  $\frac{2}{3}$  a gallon of wine and the MC of a gallon of wine is  $\frac{3}{2}$  yards of cloth.*

3. Suppose England Produces and consumes 5 yards of cloth and 2.5 gallons of wine and Portugal produces and consumes 3 yards of cloth and 2 gallons of wine. Is this a productive-efficient outcome? Is it a Pareto-Efficient outcome?

*One way to think this through:*



*This is a tough question. A good way to start is by examining the outcome with total specialization. In this case, total specialization does not lead to an outcome where we have more of everything than we do in the scenario posed by the question. But it puts us very close.*

*We are looking for levels of production for both wine and cloth that exceed those given in the question. Let's assume total specialization and suppose that England produced only cloth and Portugal produced only wine; the total production of these goods would be 10 and 4, respectively. The question assumes that in the absence of trade total production would be 8 and 4.5. So we are close.*

*Suppose that England now produces 9 yards of cloth and one half-gallon of wine; and Portugal produces 4 gallons of wine. Now the total amount of goods produced is 9 yards of cloth and 4.5 gallons of wine. Thus, the scenario posed in the question does not satisfy productive efficiency because it is possible to make more than 8 yards of cloth and still have 4.5 gallons of wine.*

*Now we have assumed that England is making (9, 0.5) and Portugal is making (0,4), where the numbers in parentheses refer the amount of cloth and wine made by a country, respectively. In the scenario given in the question, England was at (5, 2.5). Notice that England could get back to this point by trading 4 yards of cloth for two gallons of wine. If such a trade was made, Portugal would have (4,2), which is better than Portugal's outcome in the original scenario posed by the question. So Portugal is better off and England is no worse off, and we see that the scenario given in the question is not Pareto Efficient.*

*On a test in this class, I will try to guide you towards choosing prices or production levels that will lead to outcomes clearly superior to any outcomes absent specialization and trade.*