Homework0

February 16, 2025

1 Exercises

1.0.1 Exercise 1

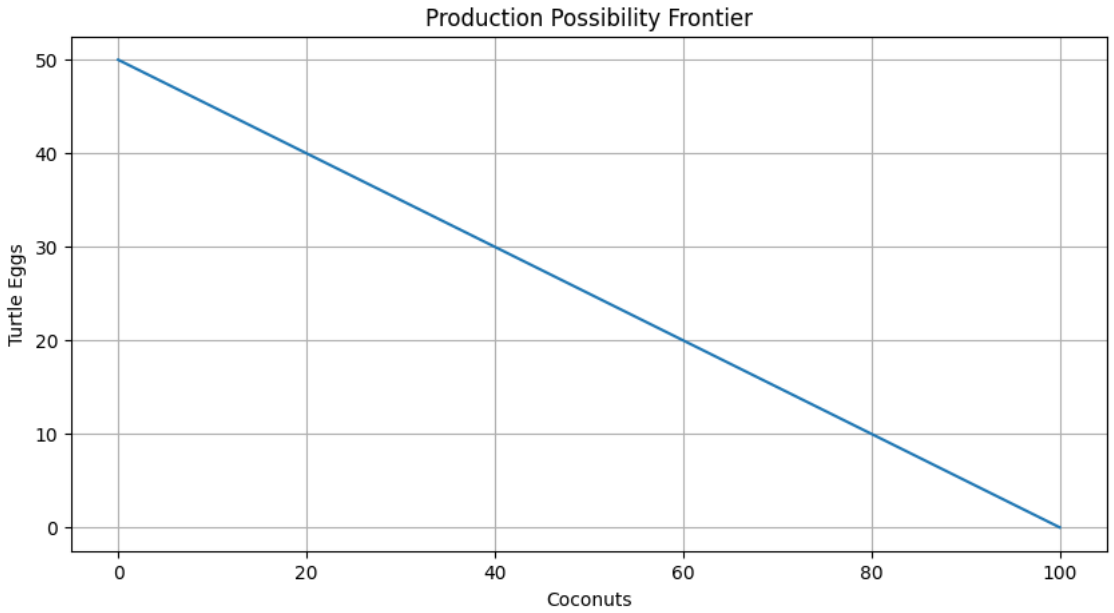
A tribe living on a tropical island includes five workers whose time is devoted either to gathering coconuts or to collecting turtle eggs. Regardless of how many other workers are engaged in the same occupation, a worker may gather either 20 coconuts or 10 turtle eggs in a day.

- (a) Draw the production possibility frontier for coconuts and turtle eggs.
- (b) Suppose that a new climbing technique is invented, making the harvesting of cocpponuts easier.

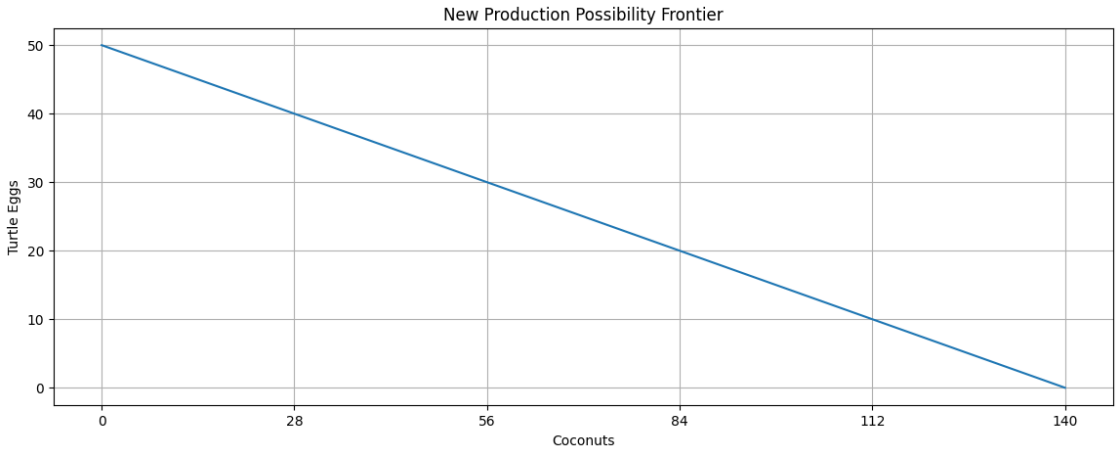
Each worker can now gather 28 coconuts in a day. Draw the new production possibility frontier.

The curves should be straght lines because `Regardless of how many other workers are engaged` so its linear.

[30]:
```
import matplotlib.pyplot as plt

coconuts = [0, 20, 40, 60, 80, 100]
turtle_eggs = [50, 40, 30, 20, 10, 0]

plt.figure(figsize=(10,5))
plt.plot(coconuts, turtle_eggs)
plt.xlabel('Coconuts')
plt.ylabel('Turtle Eggs')
plt.title('Production Possibility Frontier')
plt.grid(True)
plt.xticks(range(0, 101, 20))
plt.yticks(range(0, 51, 10))
plt.show()
```



[29]:
```
coconuts = [0, 28, 56, 84, 112, 140]
turtle_eggs = [50, 40, 30, 20, 10, 0]

plt.figure(figsize=(14,5))
plt.plot(coconuts, turtle_eggs)
plt.xlabel('Coconuts')
plt.ylabel('Turtle Eggs')
plt.title('New Production Possibility Frontier')
plt.grid(True)
plt.xticks(range(0, 141, 28))
plt.yticks(range(0, 51, 10))
plt.show()
```



1.0.2 Exercise 2

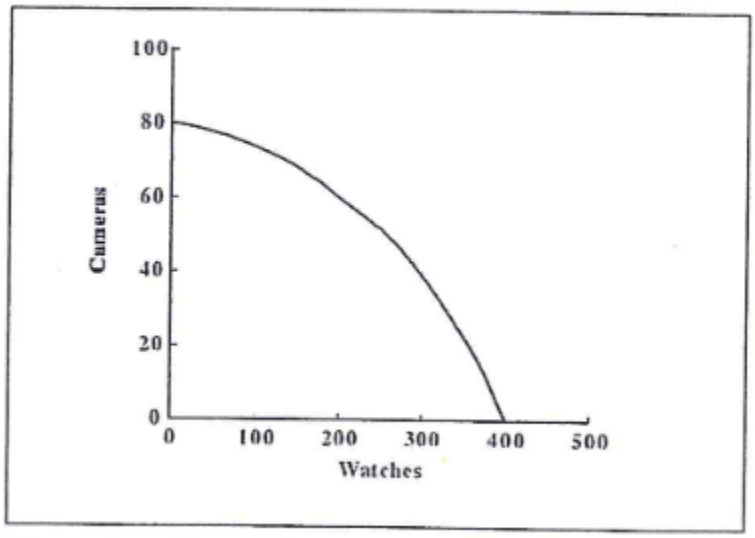


Figure 1-1 The production possibility frontier

Figure 1-1 shows a society's production possibility frontier for cameras and watches.

- (a) Identify each of the following combinations of the two goods as either efficient, inefficient, or unattainable:
  - (i) 60 cameras and 200 watches.
    - *It's on the PPF line so it's efficient.*
  - (ii) 60 watches and 80 cameras.
    - *It's outside PPF line so it's unattainalbe. For 80 cameras we can produce 0 watches.*
  - (iii) 300 watches and 35 cameras.
    - *It's inside the PPT line so it's inefficient.*
  - (iv) 300 watches and 40 cameras.
    - *It's on PPF line so it's efficient. (Very hard to measure exacly it lookes like it's on the line but it can be a bit outside it).*
  - (v) 58 cameras and 250 watches.
    - *It's outside PPF line so it's unattainalbe.*
- (b) Suppose the society is producing 300 watches and 40 cameras but wishes to produce an additional 20 cameras. How much output of watches must be sacrificed to enable these cameras to be made?

- *From 40 cameras to 60 cammeras. In the PPF for 60 cameras society can produce 200 watches. Therfore, you sacrifce 300-200=100 watches.*

- (c) How much output of watches would need to be given up for a further 20 cameras (80 in all) to be produced?
  - *Same caculation as above. For 80 cameras we have 0 watches therefore. Therefore, we give up and additional 200 cameras.*

- (d) Explain the difference in the shape of the frontier in Figure 1-1 compared with the ones you drew in Exercise 1.
  - *The difference is that one I drew are linear because the number of workers does not matter. The output grows linearly. In other words the oppurtunity cost is a constant. In contrary, in fig 1-1 tell you that if you added more workers in a specific sector it doesn't mean you will get more output. (Maybe some workers are better at somthing that the others, or when many people work together it is harder to produce cause you dont have as many tools.) Therefore, the PPF shows as a curve. In other words the oppurtunity cost is not a constant but a fuction. More precisely, is the derivate of the PPF curve.*

1.0.3 Exercise 3

(Takes time to write the exercise) Solutions are C,D,A,B.

1.0.4 Exercise 6

Solutions are B,A,C

1.0.5 Exercise 7

Solution is Only A,B,C (in or below the curve)

1.0.6 Exercise 8

Solutions are F,T,T,T,T