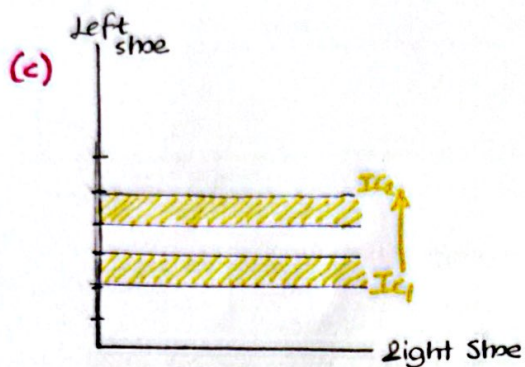
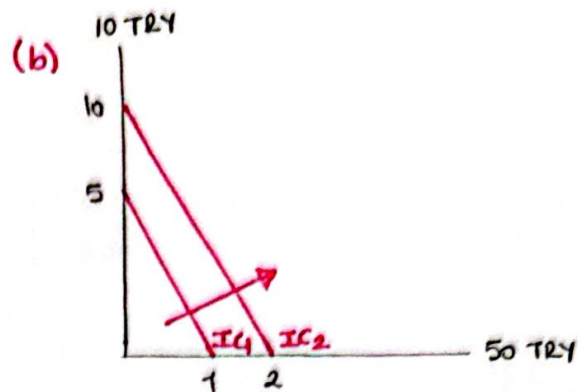
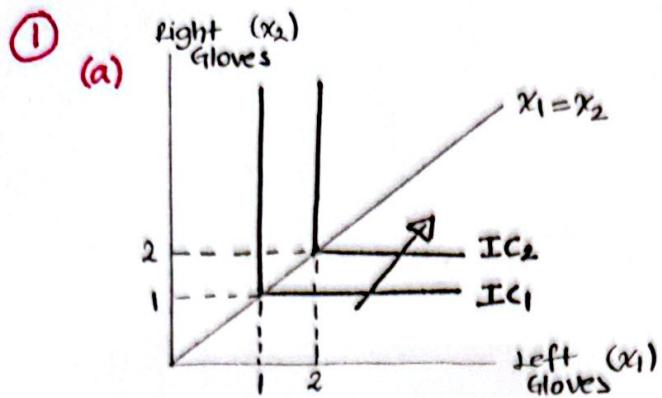
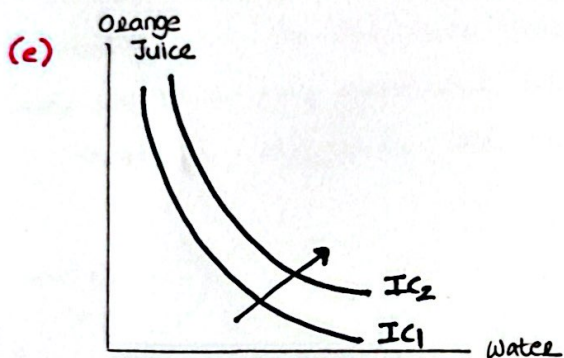
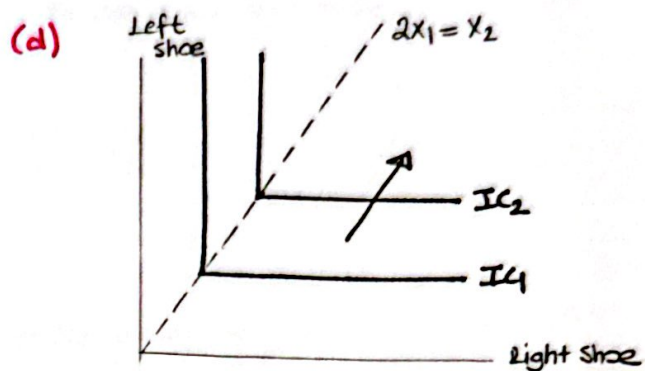


— ECON 203.01 Problem Set #1 —

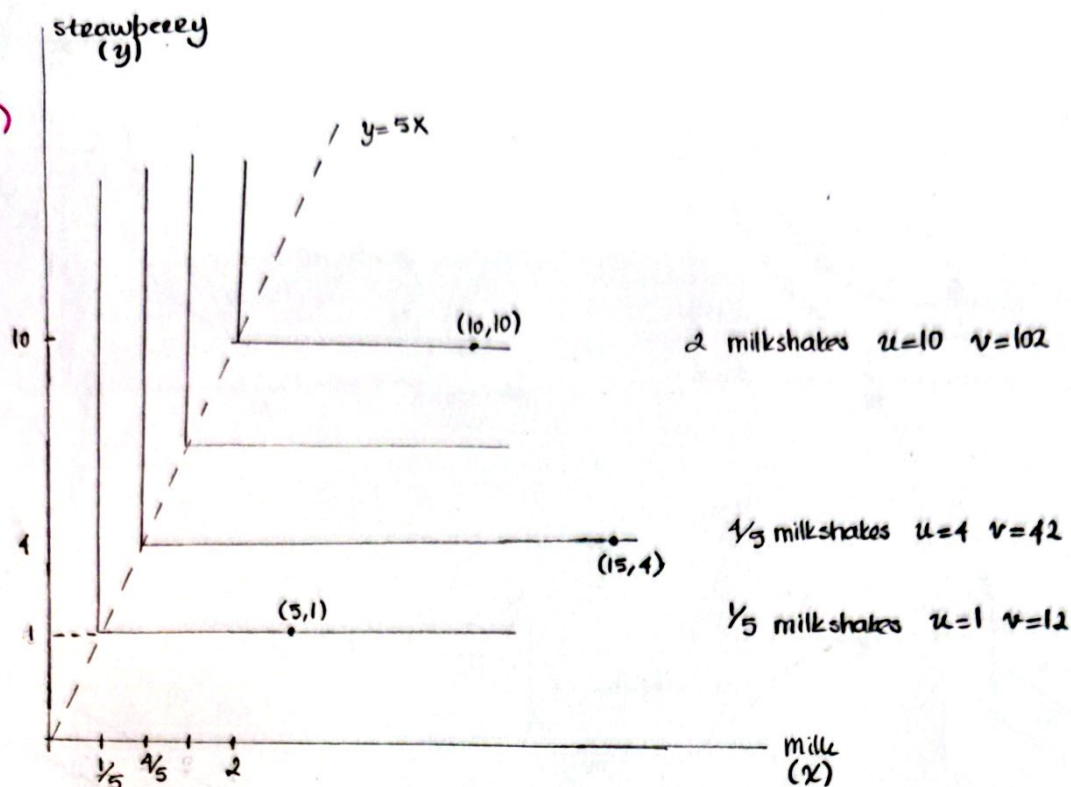


(Assume 2 left feet)



② strawberry (y)

(a)



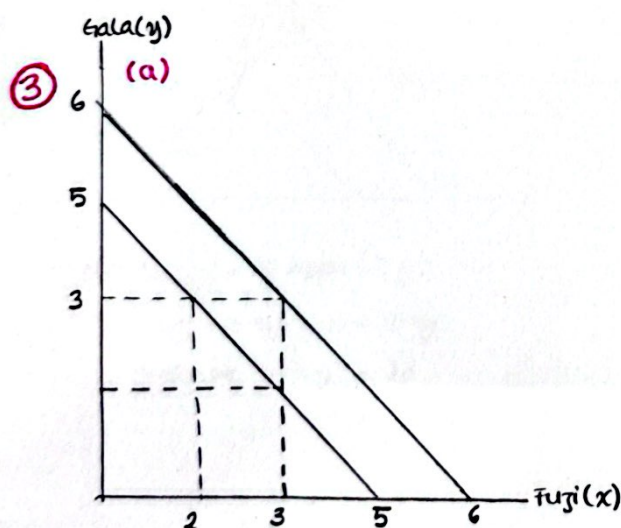
• mcs at each of these bundles is zero.

(b) A utility function that represents those preferences would be $u(x,y) = \min \{5x, y\}$.

The utility levels would be $u(3,1) = 1$; $u(10,10) = 10$ and $u(15,4) = 4$.

(c) We have, $v(x,y) = 10 \cdot \min \{5x, y\} + 2$. Since v is a monotonic transformation of u , shape of indifference curve and preference rankings will not be affected. But, the numbers utility levels assigned on each indifference curve will change. We have:

$$v(3,1) = 12; \quad v(10,10) = 102; \quad \text{and} \quad v(15,4) = 42.$$

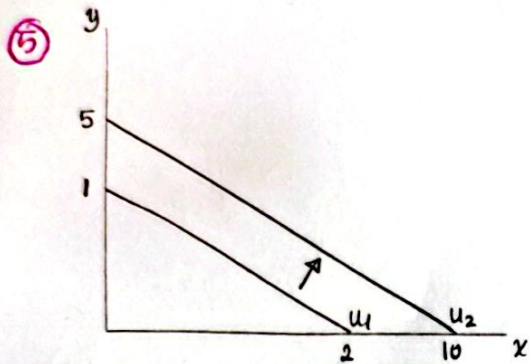
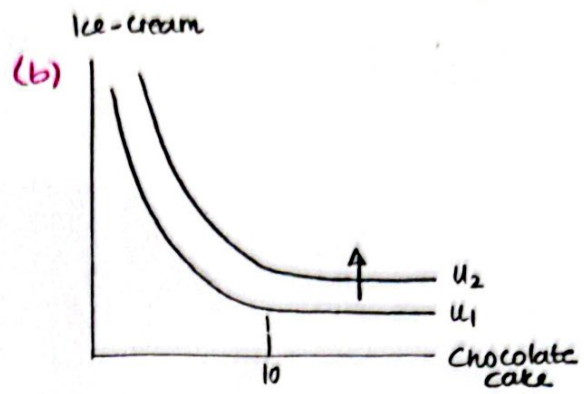
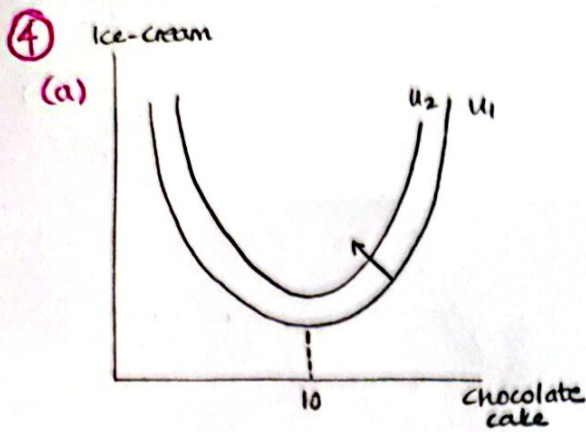


(b) here are some examples: $u(x,y) = x+y$,

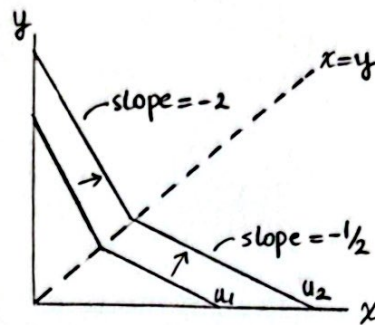
$$u(x,y) = (x+y)^2, \quad u(x,y) = 5(x+y),$$

$$u(x,y) = x+y+100.$$

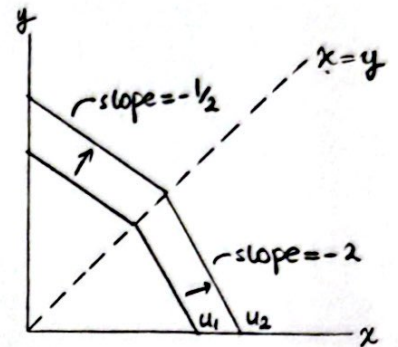
(c) mrs is negative of the slope of ic which is 1 in this case.



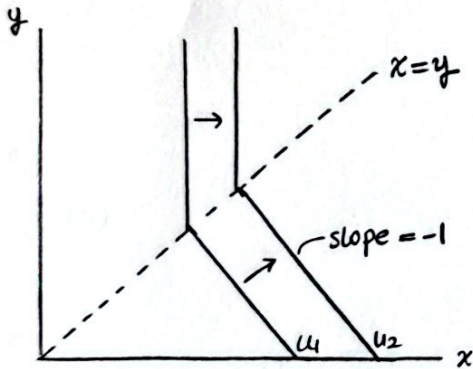
(i) $u(x, y) = x + 2y$
 $u = 10 = x + 2y$
 $x = 0 \Rightarrow y = 5$
 $y = 0 \Rightarrow x = 10$



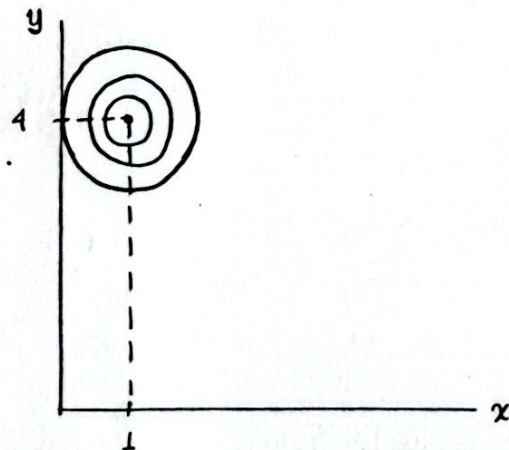
(ii) $u(x, y) = \min\{2x + y, x + 2y\}$
 $2x + y = y + x \Rightarrow x = y$ (kink)
 $x > y \Rightarrow u(x, y) = x + 2y$
 $x < y \Rightarrow u(x, y) = 2x + y$



(iii) $u(x, y) = \max\{2x + y, x + 2y\}$
 $2x + y = x + 2y \Rightarrow x = y$ (kink)
 $x > y \Rightarrow u(x, y) = 2x + y$
 $x < y \Rightarrow u(x, y) = x + 2y$



(iv) $u(x, y) = x + \min\{x, y\}$
 $x > y \Rightarrow u(x, y) = x + y$
 $x < y \Rightarrow u(x, y) = 2x$



(v) $u(x, y) = -(x-1)^2 - (y-4)^2$
 • classical eqn. of a circle centered (1, 4) and it is the satiation point.