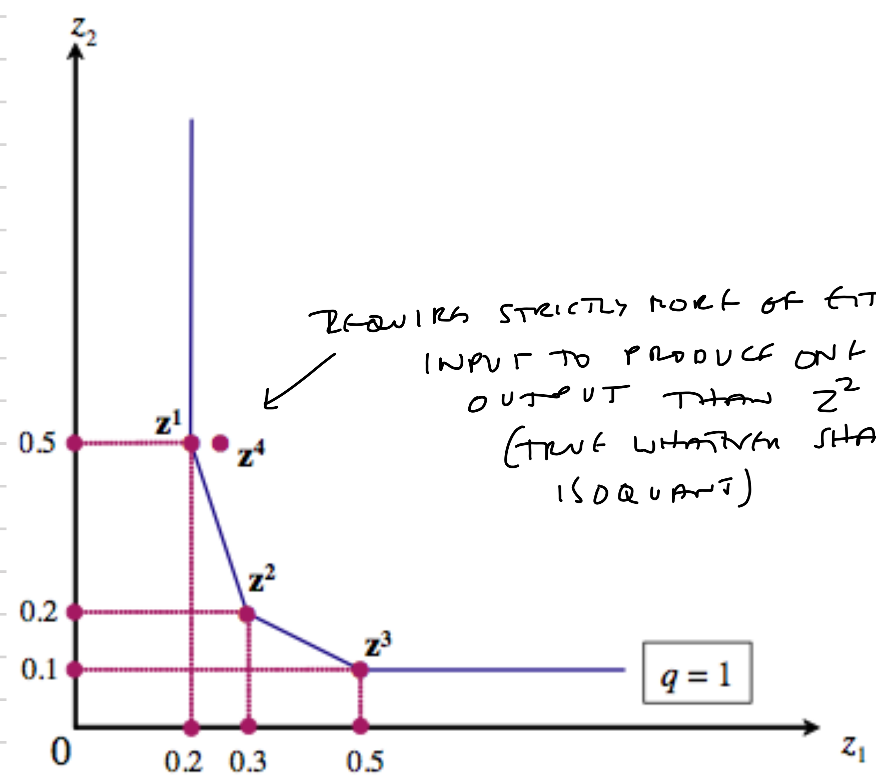
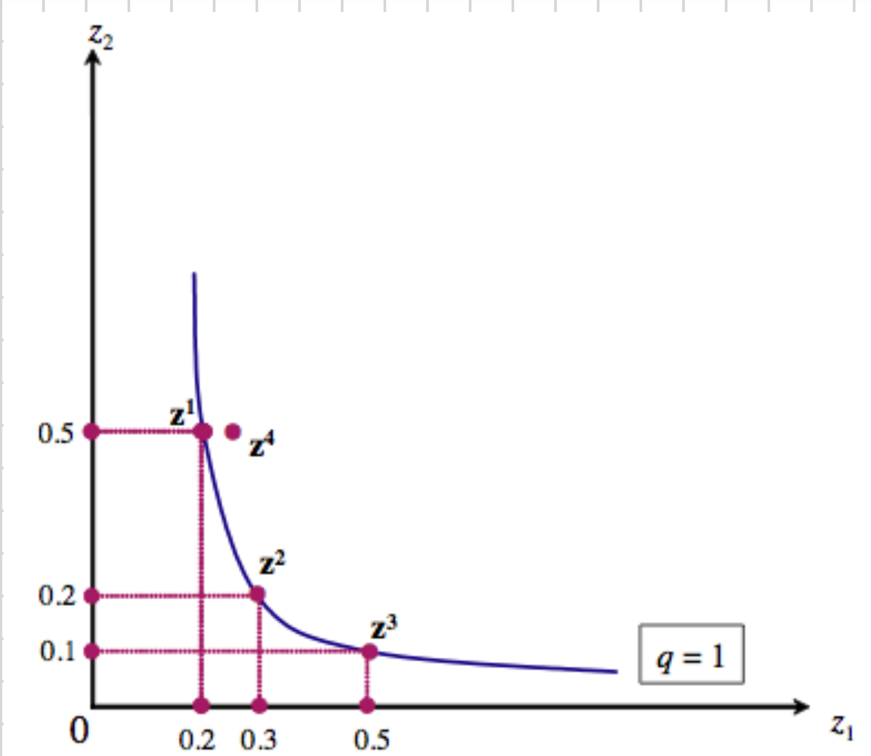
Ex. 2.1

Convex combinations of 3 processes

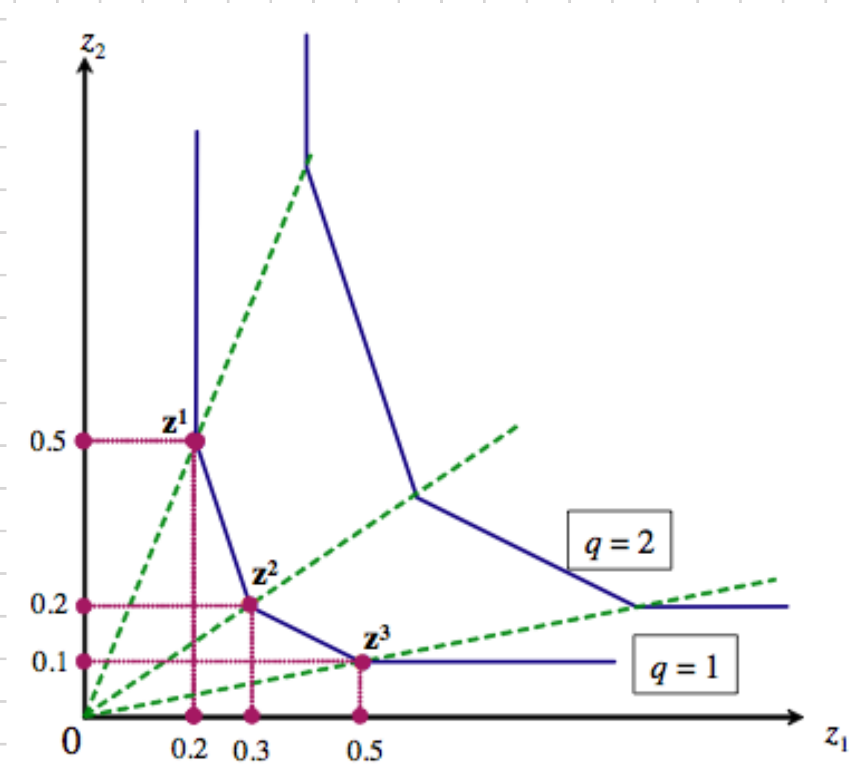


Requires strictly more of either input to produce one unit of output than z^2 (true whatever shape of isoquant)

An alternative case (more basic techniques available)

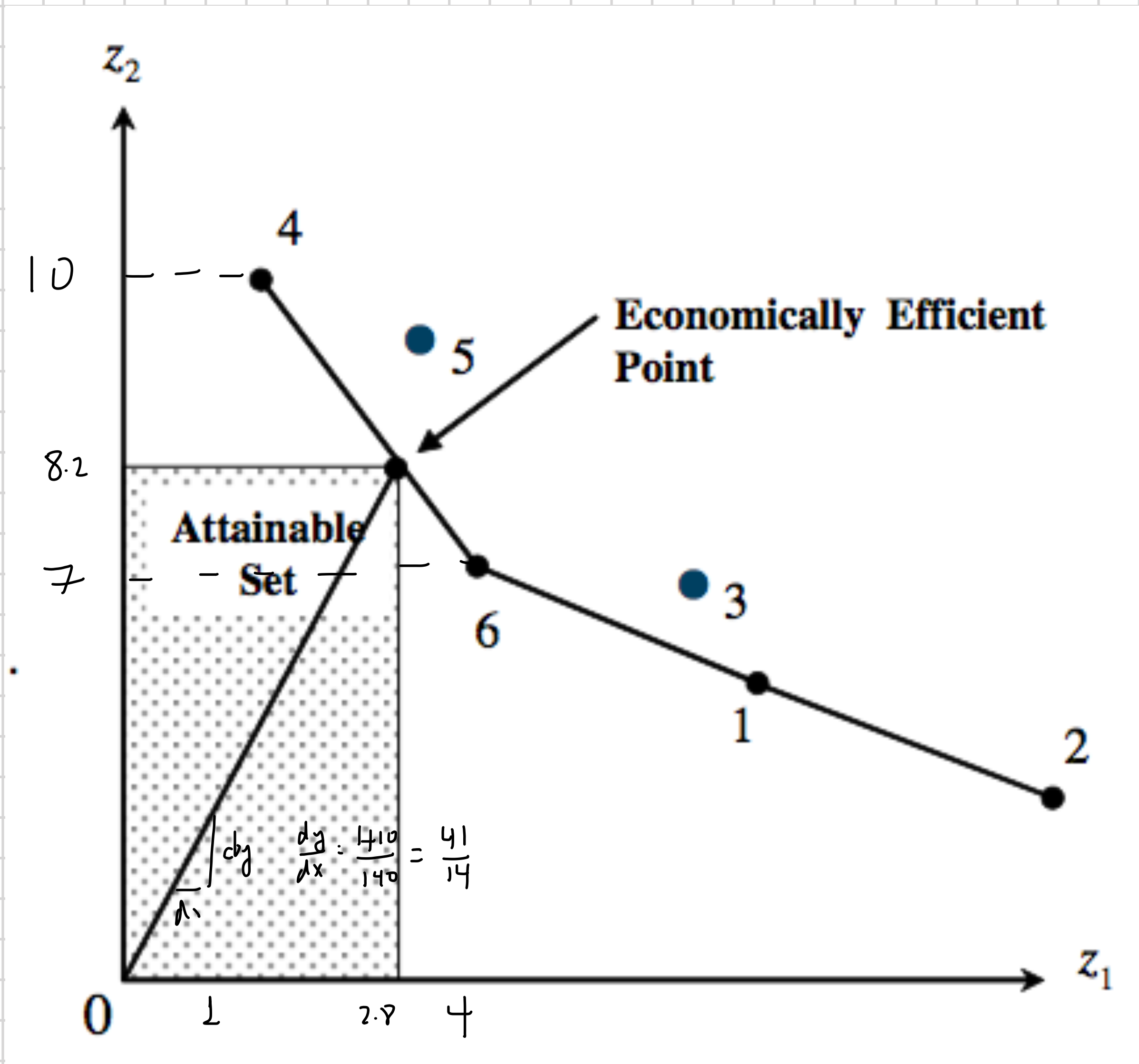


Draw rays through origin and process pts and cover twice the distance



1. ONLY PROCESSES 1,2,4,6 ARE TECHNICALLY EFFICIENT

2. GIVEN THE RESOURCE CONSTRAINT ECONOMICAL EFFICIENT INPUT COMBN IS A MIXTURE OF PROCESS 4 & 6



FOR EQN OF LINE PASSING THROUGH TWO POINTS: FIND SLOPE $m = \frac{y_1 - y_2}{x_1 - x_2}$ THEN

$y - y_1 = m(x - x_1)$

IN OUR CASE WE CAN SEE THAT RESOURCE AVAILABILITY WILL LEAD TO AN ECON. EFFICIENT POINT FROM A CONVEX COMBN OF PROCESS 4 & 6

$\Rightarrow \frac{10-7}{1-4} = \frac{-3}{3} = m$ SO $y - 10 = -1(x-1) \Rightarrow y = 11 - x$

SO TO FIND PT WHERE $y = \frac{41}{14}x$ CROSSES $y = 11 - x$ SOLVE FOR $(x,y) = \left(\frac{14}{5}, \frac{41}{5}\right) = (2.8, 8.2)$

WE ALSO KNOW THAT THE LINE CONNECTING PROCESS 4 & 6 IS A CONVEX COMBN.

$$\{t \cdot 1 + (1-t) \cdot 4, t \cdot 10 + (1-t)7\} = (4-3t, 7-3t)$$

EQUATING $\frac{14}{5} = 4-3t$ WILL GIVE US THE t (RATIO) OF PROCESS 4 WITH PROCESS 6

$\Rightarrow t = \frac{2}{5}$ ($\frac{2}{5}$ OF PROCESS 4 AND $\frac{3}{5}$ OF PROCESS 6)

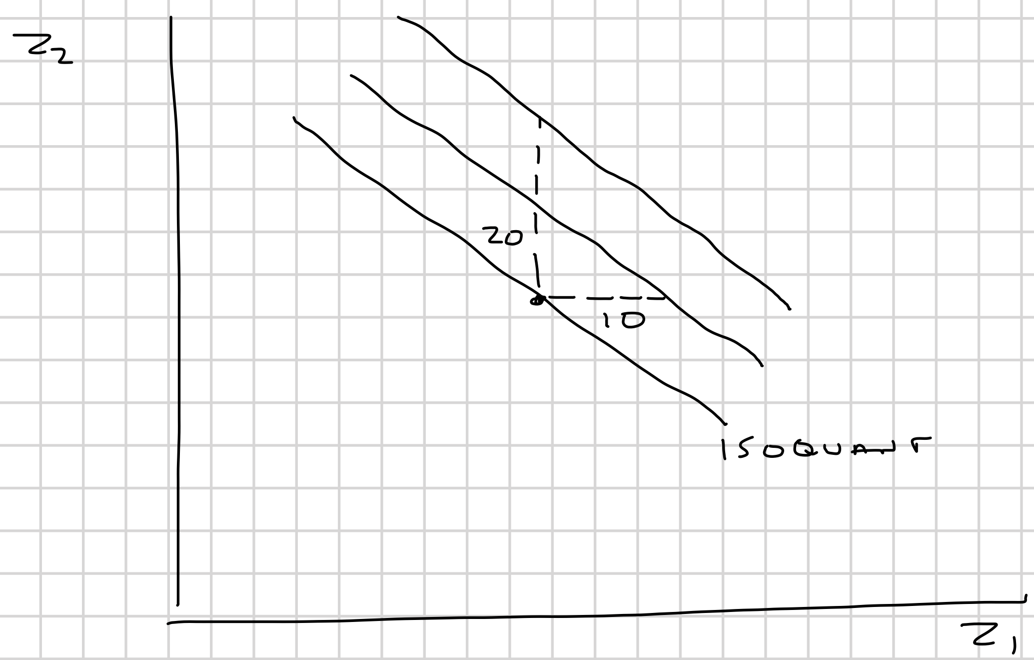
$\left(\frac{14}{5}, \frac{41}{5}\right)$ PRODUCES $Q=1$ $\quad \frac{140}{\frac{14}{5}} = 10 \cdot 5 \Rightarrow 50$ Q PRODUCED BY $(140, 410)$

$\Rightarrow \frac{2}{5}(50, 500) + \frac{3}{5}(200, 350)$ $\quad$ i.e. $50 \times (1,10)$, " $\times (4,7)$

Ex 2.2 (3)

IN THE NEIGHBOURHOOD OF THIS EFFICIENT POINT MRTS = 1

SO 20 EXTRA UNITS OF INPUT 2 CLEARLY ENABLE MORE OUTPUT TO BE PRODUCED THAN 10 EXTRA UNITS OF INPUT 1

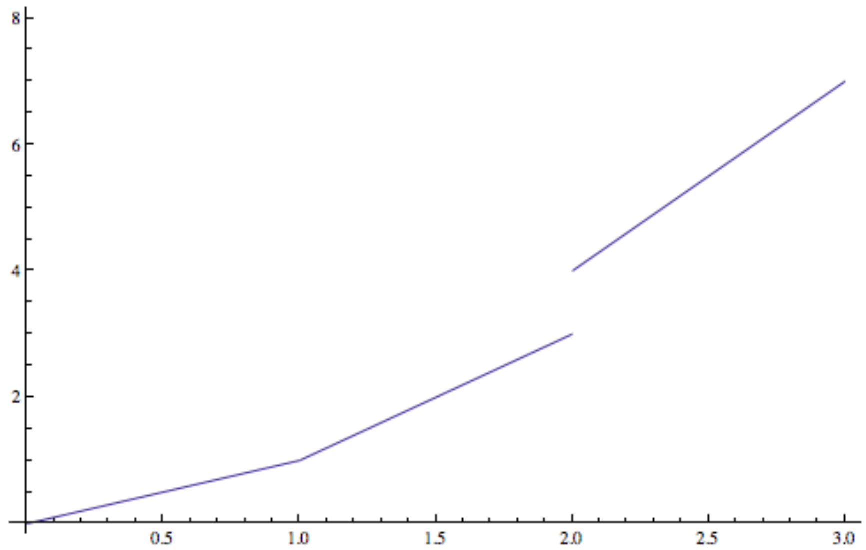


Ex. 2.3

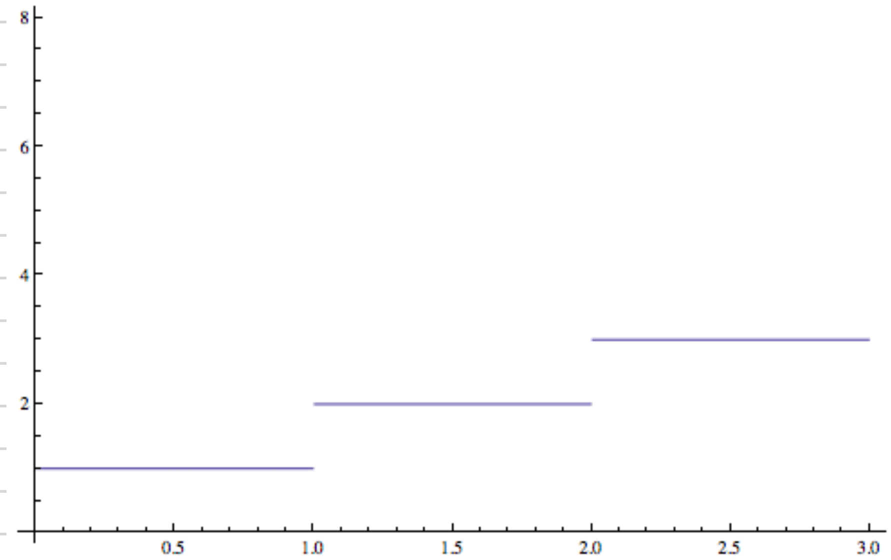
Cost fn. = $C(w,q) = kq - k + 1, \quad k-1 < q \le k, \quad k = 1,2,3\ldots$

AC: $\dfrac{C(w,q)}{q} = k + \dfrac{1-k}{q}, \quad k-1 < q \le k, \quad k = 1,2,3,\ldots$

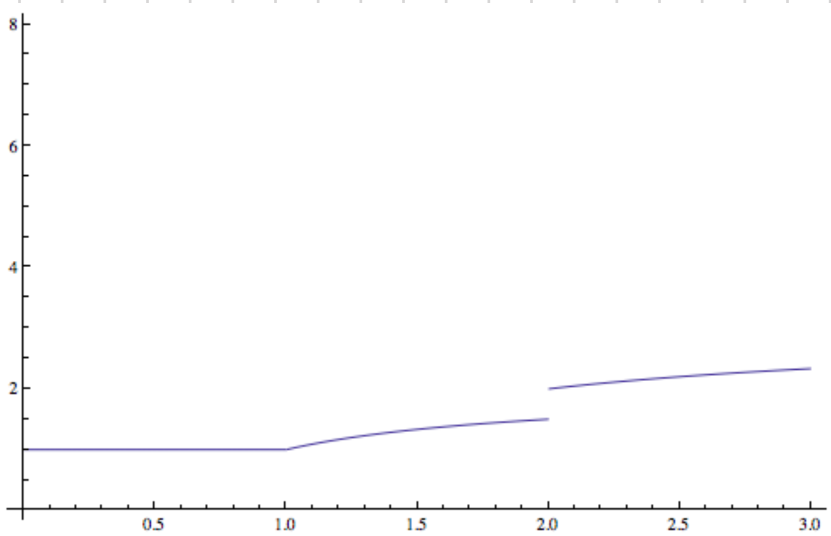
$C(w,q)$



$C_q(w,q)$



$C(w,q)/q$



TC, AC, MC