5.8.9 hw 1

5、(a) $F(K,L)=K^{\frac{1}{2}}L^{\frac{1}{2}}$

$MRTS=\frac{K}{L}\rightarrow\sigma=\frac{d\ln(\frac{K}{L})}{d\ln MRTS}=\frac{d\frac{K}{L}}{d\frac{K}{L}}=1$

(b) $F(K,L)=2K+L$

$MRTS=\frac{1}{2}\rightarrow\sigma=\frac{d\ln(\frac{K}{L})}{d\ln MRTS}=\frac{d\ln(\frac{K}{L})}{d\ln\frac{1}{2}}=\infty$

8、$Q=3K+2L=f(K,L)$

$f(\alpha K,\alpha L)=3(\alpha K)+2(\alpha L)=\alpha(3K+2L)=\alpha Q\rightarrow$ K=1

故(1)正確;(2)錯誤

$MRTS=\frac{3}{2}\rightarrow\sigma=\frac{d\ln(\frac{K}{L})}{d\ln MRTS}=\frac{d\ln(\frac{K}{L})}{d\ln(\frac{3}{2})}=\infty$

故(3)錯誤

9、(A) $q=(L^{\alpha}+K^{\alpha})^{\beta}\rightarrow(tL^{\alpha}+tK^{\alpha})^{\beta}=[t\cdot(L^{\alpha}+K^{\alpha})]^{\beta}$

$=t^{\beta}(L^{\alpha}+K^{\alpha})^{\beta}=t^{\beta}\cdot q$

當$\beta>1$為IRTS;$\beta=1$為CRTS;$\beta<1$為DRTS

(B) $\ln q=5+0.5\ln L+0.2\ln K\rightarrow 5+0.5\ln(t\cdot L)+0.2\ln(t\cdot K)$

$=5+0.7\ln t+0.5\ln L+0.2\ln K$

$=0.7\ln t+\ln q$

(C) $q=[\min\{aK,bL\}]^{\alpha}\rightarrow[\min\{atK,btL\}]^{\alpha}=t^{\alpha}\cdot[\min\{aK,bL\}]^{\alpha}$

當$\alpha>1$為IRTS;$\alpha=1$為CRSTS;$\alpha<1$為DRTS