中级微观经济学

消费者剩余

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一. 判断题

1. √
2. √ 拟线性偏好是不存在收入效应的，$CV=\Delta CS=EV$
3. × 课上的例子 $u(x_1,x_2)=x_1^{0.5}x_2^{0.5}$，$CV\neq EV$，错误
4. √ $u(x,y)=\min\{x,y\}$ $m=12$，$(3,1)\to(4,1)$

原：$u(x,y)=\frac{12}{3+1}=3$

现：$\frac{m}{4+1}=u(x,y)=3 \Rightarrow m=15$

二. 选择题

1. B $u(x,y)=2x+y$，$m=200$，$P_x=4$，$P_y=?$

原效用：$u(x,y)=\frac{200}{4}\times 2+0=100$

现效用：$(4,1)$，$m'=200-m_{提供的}$

由于 y 的效用更高，最理想全部购买 y $u(x,y)=(200-m_{提供的})\times 1=200-m_{提供的}$

则得 $200-m_{提供的}\geq 100 \Rightarrow m_{提供的}\leq 100$ 选B

2. D $u(x,y)=\min\{x,y\}$ $(x,y)=(2,1)$，$m=12$ 若 (x,y) 由 $(2,1)$ 变为 $(3,1)$

先求补偿变化：原 $u(x,y)$ $u(x,y)=\frac{12}{2+1}=4$

现 $u(x,y)$ $u(x,y)=\frac{M}{3+1}=u(x,y)=4 \Rightarrow M=16$

$\therefore CV=M-m=16-12=4$

再求等价变化 现 $u(x,y)=\frac{12}{3+1}=3$

原 $u(x,y)=\frac{M}{2+1}=3$ $M=9$

$EV=12-9=3$

$\therefore CV-EV=4-3=1$ 选D

3. B 拟线性偏好

$D(p) = 15 - \frac{p}{3}$

$p_x = 15 \to 24$

$\Delta CS = CV = EV$

$R = pD(p) = p(15 - \frac{p}{3}) = 15p - \frac{1}{3}p^2$

$$\Delta CS = \int_{15}^{24} D(p)\,dp = \int_{15}^{24} (15 - \frac{p}{3})\,dp = 15p - \frac{1}{6}p^2 \Big|_{15}^{24} = 15\times 24 - 96 - 15\times 15 + \frac{15^2}{6}$$

$$= 15\times 9 - 96 + 37.5 = 76.5$$

消费者剩余为 76.5，最终选 B

二. 计算题

$u(x,y) = xy$，$(x,y) = (1,1)$，$m = 200$　$(x,y) \to (2,1)$

消费者剩余：$D(x) = \frac{1}{1+1}\frac{m}{p_x} = \frac{m}{2p_x} = \frac{100}{p_x}$

$$\Delta CS = \int_1^2 \frac{100}{p}\,dp = 100\ln p \Big|_1^2 = 100(\ln 2 - 0) = 100\ln 2 \approx 69.3$$

补偿变化：原效应　$u(x,y) = 100\times 100 = 10000$

现效应　$u(x,y) = \frac{m}{2\times 2}\times\frac{m}{1\times 2} = 10000 \Rightarrow m = \sqrt{80000} = 200\sqrt{2}$

$CV = 200\sqrt{2} - 200 \approx 82.8$

等价变化：原效应　$u(x,y) = 50\times 100 = 5000$

现效应　$u(x,y) = \frac{m}{2}\times\frac{m}{2} = 5000 \Rightarrow m = 20\sqrt{50} = 100\sqrt{2}$

$EV = 200 - 100\sqrt{2} \approx 58.6$

∴ $\Delta CS = 69.3$，$CV = 82.8$，$EV = 58.6$