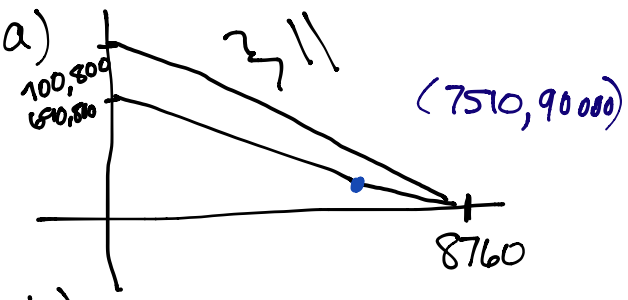
1) a)



b) ↑

c) I: $2000 \times 80 - 10000$
T = 10000
MRS: $L/y = \frac{8760 - 2000}{150,000} = \frac{169}{3750}$

d) $2000(1 - .0625)(80) = 150,000$

y-int = 657,000

(6760, 150,000)

e) Discourages. Worker @ BB is taxed @ further income.

2

a) $400(1000)\alpha + 640(1000)(1-\alpha) = 500(1000)\alpha + 440(1000)(1-\alpha)$
$\alpha = 2/3$

b) $.4(L\ hand\ eq) + .6(R\ hand) = R \quad U = f(R(\alpha))$

$\frac{dU}{d\alpha} = 0$; $Max_U = .4\,U(-240000\alpha + 640\,000) + .6\,U(60000\alpha + 440\,000)$

$-240\,000(.4)(U'(-240000\alpha + 64000)) + 60000(.6)(U'(60000\alpha + 4490000)) = 0$

$8U'(-240..) - 3U'(60\,000..) = 0$

c) $\alpha = 2/3$ $8U'(-240000(\frac{2}{3}) + 640\,000) - 3U'(60\,000(\frac{2}{3}) + 440\,000)$

$= 8U'(480\,000) - 3U'(480\,000) = 0$

$8U'(480k) = 3U'(480k)$

$\therefore \frac{dU}{d\alpha}$ @ $\alpha = \frac{2}{3} \neq 0 \therefore$ max U DNE @ $\alpha = 2/3$

d) $\frac{dEU}{d\alpha} = .4\,U(-240000\alpha + 640\,000) + .6\,U(60000\alpha + 440\,000)$

@ $\alpha = 2/3$ $36000 \times U'(480k) - 96k \times U'(480k) = \frac{dEU}{d\alpha} < 0$

$\frac{2}{3} > \alpha_{optimal}$

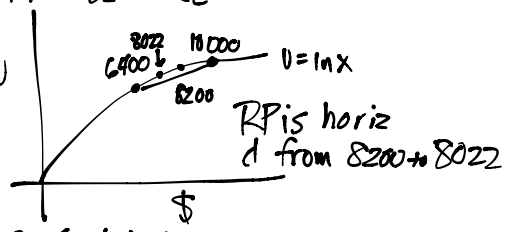
(3) a) $(.5)(10{,}000+6400)=8200$

$U_E = .5(\ln 10k + \ln 6400)$

$e^{U_E} = CE = 8022.46$

$RP = 8200 - CE$

b)



c) $.225(14400)+(1-.225)6400 = 8200$

$U_E = 8.95$

$e^{U_E} = 7707.89$

(4) a) $E = w + \frac{w}{4} = \frac{5w}{4}$; $\frac{\ln 2w}{2} + \frac{\ln \frac{w}{2}}{2} = \ln w$

b) $C = e^{\ln w} = w$; $RP = E - C = \frac{w}{4}$

c) —

d) Indifferent

e) $E = \ln((1-\alpha)w) + \frac{\ln(2w\alpha)}{2} + \frac{\ln(\frac{\alpha w}{2})}{2}$

$= \ln(1-\alpha) + \ln\alpha + 2\ln w$

$\frac{dE}{d\alpha} = \frac{-1}{1-\alpha} + \frac{1}{\alpha}$

f) $\frac{dE}{d\alpha} @ \alpha = 0 = -1 + \frac{1}{0}$ as $\alpha \to 0$

g) $0 = dE \ldots = \frac{1}{2}$

(5) a) $160k(.9) + 62500(.1) = 150{,}250$; $\sqrt{160k}(.9) + \sqrt{62.5k}(.1) = 385$

b) $C = 385^2 = 148{,}225$

c) $RP = 2025$

d) —

(6) a) $1600(.8) + 900(.2) = 1460$

b) $I_E = 1600(.64) + 900(.04) + .16(1600-350) + .16(900+350) =$

$P_{ss} = .64$ $P_{ff} = .04$ $P_{sf} = .16$ $P_{fs} = .16$

Takes deal b/c risk averse

c) $P_{ss} = .72$ $P_{ff} = .02$ $P_{sf} = .18$ $P_{fs} = .08$

$.72(1600) + 900(.02) + .18(1600-350) + .08(900+350) = 1495$

$E_{I_{ss}} = .9(1600) + .1(900) = 1530$

$E_U = .9\sqrt{1600} + .1\sqrt{900} = 39$

$E_{U,ins} = .72\sqrt{1600} + .02\sqrt{900} + .18\sqrt{1250} + .08\sqrt{1250} = 38.59$

NO

d) $39 = .72\sqrt{1600} + .02\sqrt{900} + .18\sqrt{1600 - X} + .08\sqrt{1250}$

$X = 184.75$

(7) a) $0 = 1(1-\theta) + P_W\theta$

$$\frac{-1-\theta}{\theta} = P_W$$

b) $\theta\left[500 - X\left(\frac{1-\theta}{\theta}\right)\right] = (50+X)(1-\theta)$

$$X = \frac{25 - 275\theta}{\theta - 1}$$

c) $X(.6) = 350$