

Question 3,

$$a) \quad u(w)_M = w^{1/2}$$

$$u'(w)_M = \frac{1}{2} w^{-1/2}$$

$$u''(w)_M = -\frac{1}{4} w^{-3/2} < 0$$

thus morgana is risk averse

$$u(w)_Z = w$$

$$u'(w)_Z = 1$$

$$u''(w)_Z = 0$$

thus Z is indifferent

b.

$$\begin{aligned} \text{Expected gain morgana} &= 0.8(100000) + 0.2(-10000) \\ &= 78000 \end{aligned}$$

$$\sigma_{\text{margin}} = \sqrt{0.8 (100000 - 78000)^2 + (-10000 - 78000)^2 0.2}$$

$$= 44000$$

$$\text{Expected loss } z = 0.75(-110000) + 0.25(0)$$

$$= -82500$$

$$S_z = \sqrt{0.75 (-110000 - (-82500))^2 + 0.25 (0 - (-82500))^2}$$

$$= 47631$$

(c)

$$u(CE) = E(u(w))$$

$$u(CE)_M = 0.8 u(220000) + 0.2 u(110000)$$

$$u(CE)_M = 441$$

$$\Rightarrow CE_M = 194900$$

$$u(CE)_Z = E(u(w))_Z$$

$$= 0.75(u(289000)) + 0.25u(300000)$$

$$u(CE)_Z = 2917500$$

$$\Rightarrow CG_Z = 2917500$$

$\downarrow$	with trial	without trial
$u(E(w))_{\bar{M}} = u(198000) = 445$		$u(200000) = 447$
$u(Gw)_Z = u(2917500) = 2917500$		$u(2,920,000) = 2,920,000$

$\Rightarrow$  without trial

$u(G(w))$  of both companies is higher

thus its better for Z to pay 80000 with trial