Answer Key for Quiz 3

1.

The Arrow-Prat coefficient is: $u(x) = -\frac{u''(x)}{u'(x)} = -\frac{\left(-(\alpha+\beta x)^{\frac{-(1+\beta)}{\beta}}\right)}{(\alpha+\beta x)^{\frac{-1}{\beta}}} = (\alpha+\beta x)^{-1} = \frac{1}{(\alpha+\beta x)}$

which is decreasing in wealth as long as $\beta > 0$.

2.

Consider two simple lotteries

$$L = (0.4, 0.25, 0.35), L' = (0.3, 0.4, 0.3)$$

Hence,

$$\max\{0.4, 0.25, 0.35\} = 0.4 = \max(0.3, 0.4, 0.3)$$

implying that $L \sim L'$.

However, the compound lottery $\frac{1}{2}L' + \frac{1}{2}L$ entails probabilities

$$\left(\frac{0.4+0.3}{2}, \frac{0.25+0.4}{2}, \frac{0.35+0.30}{2}\right) = (0.35, 0.325, 0.325)$$

implying that $\max\{0.35, 0.325, 0.325\} = 0.35$

Therefore,

$$\max\{0.4, 0.25, 0.35\} = 0.4 > 0.35 = \max\{0.35, 0.325, 0.325\}$$

and thus $L \succ \frac{1}{2}L' + \frac{1}{2}L$

This violates the IA, which requires

$$\frac{1}{2}L + \frac{1}{2}L \sim \frac{1}{2}L' + \frac{1}{2}L$$