1.  

(a) \((a,b)\): \(b\) weakly dominates \(a\).  
\((a,c)\): it is neither the case that \(a\) dominates \(c\) (because \(z_{12} \succ z_{4}\) and thus \(c\) is better than \(a\) in state \(s_4\)) nor the case that \(c\) dominates \(a\) (because \(z_{2} \succ z_{10}\) and thus \(a\) is better than \(c\) in state \(s_2\)).  
\((b,c)\): it is neither the case that \(b\) dominates \(c\) (because \(z_{12} \succ z_{8}\) and thus \(c\) is better than \(b\) in state \(s_4\)) nor the case that \(c\) dominates \(b\) (because \(z_{12} \succ z_{6}\) and thus \(b\) is better than \(c\) in state \(s_3\)).

(b) \((a,b)\): it is neither the case that \(a\) dominates \(b\) (because \(z_{2} \succ z_{1}\) and thus \(b\) is better than \(a\) in state \(s_1\)) nor the case that \(b\) dominates \(a\) (because \(z_{2} \succ z_{6}\) and thus \(a\) is better than \(b\) in state \(s_2\)).  
\((a,c)\): it is neither the case that \(a\) dominates \(c\) (because \(z_{3} \succ z_{1}\) and thus \(c\) is better than \(a\) in state \(s_1\)) nor the case that \(c\) dominates \(a\) (because \(z_{2} \succ z_{10}\) and thus \(a\) is better than \(c\) in state \(s_2\)).  
\((b,c)\): it is neither the case that \(b\) dominates \(c\) (because \(z_{9} \succ z_{5}\) and thus \(c\) is better than \(b\) in state \(s_1\)) nor the case that \(c\) dominates \(b\) (because \(z_{9} \succ z_{12}\) and thus \(b\) is better than \(c\) in state \(s_4\)).

(c) \(a\) strictly dominates \(b\) and \(c\), \(b\) strictly dominates \(c\).

2.  

(a) \(\text{Invest}_W = \begin{pmatrix} $1,000,000 & 0 \\ p & 1 - p \end{pmatrix} \). \(\text{Savings\_Account}_W = \begin{pmatrix} $472,500 \\ 1 \end{pmatrix} \) (If she puts the money in the savings account she will get a net return of \(\frac{5}{100} \times 450,000 = 22,500\) increasing the balance of her account to $472,500).

(b) \(\text{Invest}_R = \begin{pmatrix} $550,000 & -$450,000 \\ p & 1 - p \end{pmatrix} \). \(\text{Savings\_Account}_R = \begin{pmatrix} $22,500 \\ 1 \end{pmatrix} \).

(c) When \(p = \frac{1}{2}\), \(E[\text{Invest}_W] = 500,000\) and \(E[\text{Savings\_Account}_W] = 472,500\). Thus she will choose to invest.

(d) When \(p = \frac{1}{2}\), \(E[\text{Invest}_R] = 50,000\). \(E[\text{Savings\_Account}_W] = 22,500\). Thus she will choose to invest.

Thus, for a risk-neutral person it is equivalent to think in terms of final wealth or of (net) returns.