Chapter 2

2.3 It should be a Cobb-Douglas form.

2.9 Use a diagram.

2.10 To get you started, $\mathbf{x}^2$ is revealed preferred to $\mathbf{x}^1$.

2.11 Let $\mathbf{x}^0 = \mathbf{x}(\mathbf{p}^0, 1), \mathbf{x}^1 = \mathbf{x}(\mathbf{p}^1, 1)$, and consider $f(t) \equiv (\mathbf{p}^0 - \mathbf{p}^1) \cdot \mathbf{x}(\mathbf{p}^1 + t(\mathbf{p}^0 - \mathbf{p}^1), (\mathbf{p}^1 + t(\mathbf{p}^0 - \mathbf{p}^1)) \cdot \mathbf{x}^0)$ for $t \in [0, 1]$. Show that if $\mathbf{x}^0$ is revealed preferred to $\mathbf{x}^1$ at $(\mathbf{p}^0, 1)$, then f attains a maximum uniquely at 0 on [0, 1].

2.12 In each of the two gambles, some of the outcomes in A will have zero probability.

2.14 Remember that each outcome in A is also a gamble in $\mathcal{G}$, offering that outcome with probability 1.

2.15 Axiom G4.

2.17 Which of the other axioms would be violated by the existence of two unequal indifference probabilities for the same gamble?

2.26 Risk-averse.

2.30 Rearrange the definition and see a differential equation. Solve it for $u(w)$.

2.31 $u(w) = w^{\alpha+1}/(\alpha + 1)$.

2.35 For (a), $x_0 = x_1 = 1$. For (b), the agent faces *two* constraints, and $x_0 = 1, x_1^H = 3/2$ and $x_1^L = 1/2$. For (c), note that future income in the certainty case is equal to the expected value of income in the uncertain case.