Kevin Su

1 (a) False.   A reference class must be chosen, so only two out of the three dummy variables should be created.

(b) False. Higher exponents tend not to be used because of overfitting concerns.

(c) *True. This can also be but does not have to be an indicator variable for qualitative interactions as well.

(d) False, use [# of classes -1] dummy variables/indicators to fit the model.

2. (a) $Y = \beta_0 + \beta_1 X + \beta_2 X^2 + \beta_3 X^3$

(b) $Y = \beta_0 + \beta_{11} X_1 + \beta_{12} X_1^2 + \beta_{21} X_2 + \beta_{22} X_2^2 + \beta_{31} X_3 + \beta_{32} X_3^2$

(c) $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_{12} X_1 X_2 + \beta_{13} X_1 X_3 + \beta_{23} X_2 X_3$