**Problem 3**

For each of the following utility functions, draw indifference curves for utility level 12 and 16. Indicate *three* bundles on each of these indifference curves by specifying the coordinates of each bundle. Shade the weakly preferred set of bundles you indicated on the indifference curves of utility **16**. For each of the utility functions, determine and explain whether the preferences they represent are convex, concave, or non-convex preferences.

1. $U\_{3}\left(x\_{1},x\_{2}\right)=x\_{1}^{2}-2x\_{2}$;
2. $U\_{4}\left(x\_{1},x\_{2}\right)=Min\{4x\_{1}-4x\_{2},2x\_{1}-x\_{2}\}$.