I experimented with different heuristics in the custom functions, but most of the things I tried did not score too favourably. Ultimately, I was only able to implement one evaluation function whose performance was superior to the baseline improved_score evaluator.

The custom score 3 is using the inverse of the center score algorithm. It scores higher for squares closer to the edge of the board. Not too suprisingly it didn't score too well in the tournament.py test.

Custom score 2 is avoiding contact with the opposing piece by checking to see if any of it's opponents following moves at the depth investigated are also available to the player, it then scores higher for avoiding those moves. This was implemented together with the improved evaluation as it works better with it then alone. I was mostly using this as a comparison with the evaluation I ended up using in custom score 1.

Custom score 1 has the player aggressively looking to take away moves from the opponent. It checks to see if the move considered is in the opponent's list of moves and if it is it scores higher. When combined with the improved evaluator, it scores better then the baseline by 2 or 3 percentage points(280 games probably isn't enough for a stable comparison so I ran it several times to verify it was an improvement).

Match #	Opponent	AB_Improved	AB_Custom	AB_Custom_2	AB_Custom_3
		Won | Lost	Won | Lost	Won | Lost	Won | Lost
1	Random	17 | 3	18 | 2	20 | 0	18 | 2
2	MM_Open	15 | 5	16 | 4	14 | 6	17 | 3
3	MM_Center	17 | 3	18 | 2	16 | 4	15 | 5
4	MM_Improved	12 | 8	14 | 6	14 | 6	16 | 4
5	AB_Open	12 | 8	9 | 11	9 | 11	8 | 12
6	AB_Center	12 | 8	11 | 9	13 | 7	10 | 10
7	AB_Improved	11 | 9	13 | 7	12 | 8	8 | 12
	Win Rate:	68.6%	70.7%	70.0%	65.75%

In the end my preference out of the things I tried is my custom score 1 because a) it had the best win rate b) It was demonstrated in the lessons that a viable strategy in isolation is attempting to cut off or deny your opponent a path, and taking an option away from them is potentially a way of doing that. Since knights can hop over obstacles though, just trying to cut the board in half is not the way to do this. So the evaluation made sense to me. c) It integrated the already tested improved evaluation function and improved on it a tiny bit with an extra feature.