Linear Optimization (Spring 2023): Homework 6

- The total points (given in parentheses) add up to 150. You will be graded for 140 points (with the possibility of getting up to 10 points as extra credit).
- BT-ILO stands for the text (Bertsimas and Tsitsiklis: Introduction to Linear Optimization).
- **You must email your submission as a PDF file to kbala@wsu.edu**. You are welcome to write answers by hand, and scan the writings **into a PDF file**.
- **Your file name should identify you in the following manner. If you are Hackelm Cartman, you should name your submission HackelmCartman_Hw6.pdf. If you want to add more bits to the title, e.g., Math464, you could name it HackelmCartman_Math464_Hw6.pdf, for instance. But you should start the file name with HackelmCartman; and NOT "Hackelm Cartman" or "Hack_Cartman" or ...**
- **Begin the SUBJECT of your email submission with the same `FirstnameLastname`, e.g., "HackelmCartman Hw6 submission".**
- **This homework is due by 4:59 PM on Tuesday, February 28**.

1. (30) BT-ILO Problem 2.6 from page 76–77.
2. (25) BT-ILO Problem 2.7 from page 77.
3. (30) BT-ILO Problem 2.9 from page 77.
4. (15) BT-ILO Problem 2.11 from page 77.
5. (25) BT-ILO Problem 2.16 from page 78.
6. (25) BT-ILO Problem 3.1 from page 129.

   Hint: For a proof by contradiction, start by assuming that there is a point $\mathbf{x}$ with $\|\mathbf{x}-\mathbf{x}^*\| > \epsilon$ such that $f(\mathbf{x}) < f(\mathbf{x}^*)$. Now consider a point on the line segment joining $\mathbf{x}$ and $\mathbf{x}^*$ that is closer to $\mathbf{x}^*$ than ϵ, and apply the results of convexity.