

SOLUTION OF ASSIGNMENT 2

1. Extreme point.
2. No.
3. $\bar{C}_N = C_N - C_B B^{-1} N$
If $\bar{C}_N \geq 0$, the bfs $[x_B, x_N]$ gives optimal solution.
4. Primal problem will be unbounded below i.e. optimal value will be $-\infty$.
5. $x > 0, s > 0$
6. Polynomial.
7. $2^{-\frac{3}{2}}$
8. Predictor step $\sigma_k = 0$
Corrector step $\sigma_k = 1$.
9. Long step path following algorithm.
10. Yes.
11. $k = \frac{n(n+1)}{2}$
12. No, as S_+^n is not polyhedral.
13. An SDP.
14. NO.
15. $xz=0$
16. NO, its SDP.
17. $\partial_\epsilon f(\bar{x})$
18. $\partial h(\bar{x}) \subseteq \partial g(\bar{x})$.
19. No.
20. For $\epsilon = 0$, its a cone.
For $\epsilon > 0$, its not.