

## Problems for Lecture 21

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1.

The union of two circular discs is a convex set if and only if the two discs overlap meaning that they have non-empty intersection. The square is ditto.

5.

Either situation is not convex. we can choose the boundary point in the convex set and choose another point outside the convex point. As a result, the mean value is not in the function  $F(x)$ .