

7. (a) (4 points) State the Intermediate Value Theorem.
- (b) (4 points) Sketch a function on the interval $[1, 2]$ for which the conclusion of the Intermediate Value Theorem is false.
- (c) (4 points) Use the Intermediate Value Theorem to show that for any fixed number a between 0 and 1, there exists a number x such that $\sin(x) = a$.