Worksheet 1/21/2026

1) Prove that the equation $x - \cos x = 0$ has exactly one real solution.

2) Convert the root-finding problem $x - \cos x = 0$ into a fixed-point problem and find the fixed point correct to 2 decimal places.

We know from the previous worksheet that the equation $x^4 - 4x + 2 = 0$ *has exactly two real solutions. One solution is in* $(0, 1)$*. The other solution is in* $(1, 2)$*.*

3) Convert the root-finding problem $x^4 - 4x + 2 = 0$ into a fixed-point problem and find the **smaller** fixed point correct to 2 decimal places.

4) Convert the root-finding problem $x^4 - 4x + 2 = 0$ into a fixed-point problem and find the **larger** fixed point correct to 2 decimal places.