

3.2 Exercises

1–4 Verify that the function satisfies the three hypotheses of Rolle's Theorem on the given interval. Then find all numbers c that satisfy the conclusion of Rolle's Theorem.

1. $f(x) = 5 - 12x + 3x^2$, $[1, 3]$

2. $f(x) = x^3 - x^2 - 6x + 2$, $[0, 3]$

3. $f(x) = \sqrt{x} - \frac{1}{3}x$, $[0, 9]$

4. $f(x) = \cos 2x$, $[\pi/8, 7\pi/8]$

9–12 Verify that the function satisfies the hypotheses of the Mean Value Theorem on the given interval. Then find all numbers c that satisfy the conclusion of the Mean Value Theorem.

9. $f(x) = 2x^2 - 3x + 1$, $[0, 2]$

10. $f(x) = x^3 - 3x + 2$, $[-2, 2]$

11. $f(x) = \sqrt[3]{x}$, $[0, 1]$

12. $f(x) = 1/x$, $[1, 3]$
