

ECON 7115

Assignment 3

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Jiawen KE
HKUST, SOSC

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Differentiation Results at (2,1):

- Forward diff at point (2,1): 14.2109 -7.1054
- Backward diff at point (2,1): 12.4345 -7.1054
- Centered diff at point (2,1): 13.3227 -7.1054
- Automatic diff at point (2,1): 8.8766 -7.3802
- Analytical diff at point (2,1): 13.531 -7.3802

Differentiation Results at (5,3):

- Forward diff at point (5,3): 42.6326 -71.0543
- Backward diff at point (5,3): 49.738 -42.6326
- Centered diff at point (5,3): 46.1853 -56.8434
- Automatic diff at point (5,3): 33.8251 -63.065
- Analytical diff at point (5,3): 43.492 -63.065

Integrals

Integral of $f(x, y)$ over $[0, 1] \times [1, 3]$:

- The trapezoid integral is: 10.4321
- The Simpson integral is: 10.4903
- The Monte Carlo integral is: 10.3979
- The analytical integral is: 10.4319