Math 229 Quiz 10a

You may use only Julia or `math229.github.io` – no other websites.

NAME: Solutions

Problem 1. Write the answers, accurate to ten (10) decimal places.

$$f(x) = \sqrt{x+2}\cos(x+3) + x^2\sin(2x) \quad \text{for} \quad 5 \le x \le 10.$$

a. Use `fzero` to find all critical points of $f(x)$.

5.6029006541
7.1471816410
8.6880770747

b. Use `fzero` to find all inflection points of $f(x)$.

6.4438760149
7.9770230618
9.5242365722

c. Where is $f(x)$ increasing?

$(5.6029006541, 7.1471816410)$

$(8.6880770747, 10)$

d. Where is $f(x)$ concave up?

$(5, 6.4438760149)$

$(7.9770230618, 9.5242365722)$.

e. Classify the critical points using the first derivative test.

5.6029006541	$-\,+$ f'	min
7.1471816410	$+\,-$ f'	max
8.6880770747	$-\,+$	min

Math 229 Quiz 10b

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NAME: Solutions

Problem 1. Write the answers, accurate to ten (10) decimal places.

$$f(x) = \sqrt{x+3}\cos(x+2) + x^3\sin(2x) \quad \text{for} \quad 5 \le x \le 10.$$

a. Use `fzero` to find all critical points of $f(x)$.

5.6317639327
7.1710521827
8.7233141764

b. Use `fzero` to find all inflection points of $f(x)$.

6.5068154017
8.0358500541
9.5786669906

c. Where is $f(x)$ increasing?

$(5.6317639327, 7.1710521827)$

$(8.7233141764, 10)$

d. Where is $f(x)$ concave up?

$(5, 6.5068154017)$

$(8.0358500541, 9.5786669906)$

e. Classify the critical points using the first derivative test.

5.6317639327	−+ f	min
7.1710521827	+− f	max
8.7233141764	−+	min