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Due: Fri Oct 20 2017 07:30 AM MDT
Suppose $f(x)$ is a function such that

- $f(2) = 1$
- The domain of $f$ is $(-\infty, \infty)$.
- The sign chart of $f'$ is

\[
\begin{array}{cccccc}
-\infty & -3 & -1 & 2 & \infty \\
\hline
\text{f'} & - & + & - & + \\
\end{array}
\]

A sign chart is a real number line that shows where the derivative is positive (+) and negative (−).

On your own graph paper make a possible sketch of the function $f(x)$.

It is not possible for webassign to check your graph, so get feedback. Then answer the following question about your graph.

**Note:** Only 6 submissions allowed, but **you lose a half point** per submission.

Which of the following statements is true about the function $f$?
Select all that apply.

- $f'$ is positive on the interval $(-3, -1)$
- $f$ is negative on the interval $(-1, 2)$
- $f$ is increasing on the interval $(2, \infty)$
- $f'$ is negative on the interval $(-\infty, -3)$
- $f$ is decreasing on the interval $(-1, 2)$
- $f$ is decreasing on the interval $(-3, -1)$
- $f$ passes through the point $(2,0)$.

Keep your graph you created. You will need it on the next problem and may be asked to hand it in for feedback.
In the previous problem you created a graph for the function $f(x)$ such that

- $f(2) = 1$
- The domain of $f$ is $(-\infty, \infty)$.
- The sign chart of $f'$ is

$$
\begin{array}{cccccc}
-\infty & -3 & -1 & 2 & \infty \\
 f' & - & + & - & + \\
\end{array}
$$

A sign chart is a real number line that shows where the derivative is positive ($+$) and negative ($-$).

Use your graph to answer the following question. **You get only two attempts** at each question. Be sure you get feedback on your graph first.

1. List all locations where $f$ has a local maximum. Enter your answers as a comma separated list. Do not include endpoints. If there are no local maxima, enter DNE.

   Local Maximum at $x =$

2. List all locations where $f$ has a local minimum. Enter your answers as a comma separated list. Do not include endpoints. If there are no local minima, enter DNE.

   Local Minimum at $x =$
3. Question Details

Suppose $f(x)$ is a function such that

- $f(0) = 0$
- The domain of $f$ is $[-\pi, \pi]$
- $f'(x) = \left(2\cos x + 1\right)(2\sin x - \sqrt{3})$

**Note:** Only 5 submissions allowed on each part.

1. Find all locations (in the domain) where $f$ has a horizontal tangent.

   Enter your answers as a comma separated list using **exact symbolic notation**. Do not include endpoints. If you believe there are no horizontal tangents, enter DNE.

   $x =$

2. Make a sign chart for $f'$. Then sketch a graph of $f$. Get feedback.

3. List all locations where $f$ has a local maximum. Enter your answers as a comma separated list. Do not include endpoints. If there are no local maxima, enter DNE.

   Local Maximum at $x =$

4. List all locations where $f$ has a local minimum. Enter your answers as a comma separated list. Do not include endpoints. If there are no local minima, enter DNE.

   Local Minimum at $x =$
Assume that \( f(x) \) is a continuous function such that

- \( f(0) = 0. \)
- \( f'(x) > 0 \) everywhere.
- The slope of \( f \) is increasing.

Which of the following is a possible graph of \( f(x) \)?
Assume that \( f(x) \) is a continuous function such that

- \( f(0) = 0 \).
- \( f'(x) > 0 \) everywhere.
- The slope of \( f \) is decreasing.

Which of the following is a possible graph of \( f(x) \)?
Assume that $f(x)$ is a continuous function such that

- $f(0) = 0$.
- $f'(x) < 0$ everywhere.
- The slope of $f$ is increasing.

Which of the following is a possible graph of $f(x)$?
Assume that $f(x)$ is a continuous function such that

- $f(0) = 0$.
- $f'(x) < 0$ everywhere.
- The slope of $f$ is decreasing.

Which of the following is a possible graph of $f(x)$?
Assignment Details
Name (AID): Curve Sketching Intro: Advanced (10862414)
Submissions Allowed: 100
Category: Homework
Code: 
Locked: Yes
Author: Velasquez, Elena (elenavelasquez@boisestate.edu)
Last Saved: Aug 15, 2017 11:01 AM MDT
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