

Writing about behaviors of functions in terms of derivatives

INSTRUCTIONS (print one copy)

- Go to **Table A**.
 - Read the problem.
 - Draw a bubble around a relevant sentence (you might need to provisionally bubble multiple sentences that have the same stem and then narrow down your choice of sentence later). Label this bubble **(II)**.
 - In bubbled sentence, fill in blue entries using appropriate function name from problem statement.
- Go to **Table B**.
 - Copy function name from step 1.c into blue entries in subcolumn B1.
 - Did the problem try to confuse you by giving you a function (expression or graph) that is **different** from the function you actually want to analyze?
 - Yes**, they are trying to trick me:
 - Draw a checkmark in the space **B0** underneath the title for **Table B**.
 - Use problem statement to fill in one of the green entries in subcolumn B2 or subcolumn B3.
 - If you are working in subcolumn B3, copy the green text you just wrote into the remaining green entries of subcolumn B3.
 - If you are working in subcolumn B2, carefully apply differentiation, integration, and/or fundamental theorem of calculus to obtain content for the remaining green entries of subcolumn B2.
 - No**, they are not trying to trick me:
 - Go on.
 - Draw a bubble around one or more consecutive relevant rows. Label this bubble **(I)**.
- Go back **Table A**, bubble **(II)**.
 - Did you previously draw a checkmark in space **B0**?
 - Yes**, space **B0** is checked:
 - Fill in the faint green text using **Table B**.
 - Read the evidence portion of the sentence, loudly emphasizing text in the faint green text entry.
 - No**, space **B0** is not checked:
 - Cross out the faint green text.
 - Read the evidence portion of the sentence.
 - Use graph/expression from problem to determine and write in the contents of golden entry.
 - Copy text from golden entry into pink entry.
- Go to workspace (where you are writing out your solution).
 - Write out the contents of bubble **(I)**.
 - If you drew bubble **(II)** around sentence 14, leave lots of space to carry out the candidates test.
 - Write out the contents of filled-in bubble **(II)**.

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WORKSHEET (print multiple copies)

Table A

	Claim		Evidence
1.	$\underline{\quad}$ is increasing at/on $\underline{\quad}$	because	$\underline{\quad}' = \underline{\quad} > 0$ at/on $\underline{\quad}$.
2.	$\underline{\quad}$ is decreasing at/on $\underline{\quad}$	because	$\underline{\quad}' = \underline{\quad} < 0$ at/on $\underline{\quad}$.
3.	$\underline{\quad}$ has a local max at $\underline{\quad}$	because	$\underline{\quad}' = \underline{\quad}$ changes sign from positive to negative at $\underline{\quad}$.
4.	$\underline{\quad}$ has a local max at $\underline{\quad}$	because	at $\underline{\quad}$, both $\underline{\quad}' = \underline{\quad} = 0$ and $\underline{\quad}'' = \underline{\quad} < 0$.
5.	$\underline{\quad}$ has a local min at $\underline{\quad}$	because	$\underline{\quad}' = \underline{\quad}$ changes sign from negative to positive at $\underline{\quad}$.
6.	$\underline{\quad}$ has a local min at $\underline{\quad}$	because	at $\underline{\quad}$, both $\underline{\quad}' = \underline{\quad} = 0$ and $\underline{\quad}'' = \underline{\quad} > 0$.
7.	$\underline{\quad}$ is concave up at/on $\underline{\quad}$	because	$\underline{\quad}' = \underline{\quad}$ is increasing at/on $\underline{\quad}$.
8.	$\underline{\quad}$ is concave up at/on $\underline{\quad}$	because	$\underline{\quad}'' = \underline{\quad} > 0$ at/on $\underline{\quad}$.
9.	$\underline{\quad}$ is concave down at/on $\underline{\quad}$	because	$\underline{\quad}' = \underline{\quad}$ is decreasing at/on $\underline{\quad}$.
10.	$\underline{\quad}$ is concave down at/on $\underline{\quad}$	because	$\underline{\quad}'' = \underline{\quad} < 0$ at/on $\underline{\quad}$.
11.	$\underline{\quad}$ has a point of inflection at $\underline{\quad}$	because	$\underline{\quad}'' = \underline{\quad}$ changes sign at $\underline{\quad}$.
12.	$\underline{\quad}$ has a point of inflection at $\underline{\quad}$	because	$\underline{\quad}' = \underline{\quad}$ changes from increasing to decreasing at $\underline{\quad}$.
13.	$\underline{\quad}$ has a point of inflection at $\underline{\quad}$	because	$\underline{\quad}' = \underline{\quad}$ changes from decreasing to increasing at $\underline{\quad}$.
14.	$\underline{\quad}$ has an absolute (global) maximum/minimum value of $\underline{\quad}$ at $\underline{\quad}$		according to the candidates test.

Table B

B0. [] Check here if table B is being used.

B1		B2 General	B3 Common scenario
$\int_a^x \underline{\quad}(t) dt$		$\underline{\quad}(x)$	
$\underline{\quad}(x)$	=	$\underline{\quad}'(x)$	$\int_a^x \underline{\quad}(t) dt$
$\underline{\quad}'(x)$	=	$\underline{\quad}''(x)$	$\underline{\quad}(x)$
$\underline{\quad}''(x)$	=		$\underline{\quad}'(x)$