

2007 AP[®] CALCULUS AB FREE-RESPONSE QUESTIONS

6. Let f be the function defined by $f(x) = k\sqrt{x} - \ln x$ for $x > 0$, where k is a positive constant.
- (a) Find $f'(x)$ and $f''(x)$.
 - (b) For what value of the constant k does f have a critical point at $x = 1$? For this value of k , determine whether f has a relative minimum, relative maximum, or neither at $x = 1$. Justify your answer.
 - (c) For a certain value of the constant k , the graph of f has a point of inflection on the x -axis. Find this value of k .
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WRITE ALL WORK IN THE PINK EXAM BOOKLET.

END OF EXAM