

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Determine the value of the real number b so that the piece-wise defined function

$$f(x) = \begin{cases} x^2 + bx + 9, & \text{if } x \leq 2 \\ \frac{x^2 - 9x + 14}{x^2 + x - 6}, & \text{if } x > 2 \end{cases}$$

be continuous at $x = 2$.

2. Find an equation for the tangent line to the graph of $f(x) = \sqrt{2 - x}$ at $x = -2$. (**Hint:** You are supposed to use the limit definition of the derivative to find the slope.)