

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. Consider the piece-wise defined function $f(x) = \begin{cases} x^2 + 2x - 8, & \text{if } x \leq 1 \\ x - 2, & \text{if } x > 1. \end{cases}$
- (a) Sketch the graph of $y = f(x)$.

- (b) Find the following:

$$f(1) =$$

$$\lim_{x \rightarrow 1^-} f(x) =$$

$$\lim_{x \rightarrow 1^+} f(x) =$$

$$\lim_{x \rightarrow 1} f(x) =$$

2. Compute the following limits:

(a) $\lim_{x \rightarrow 4} \frac{x-1}{\sqrt{x}-1} =$

(b) $\lim_{x \rightarrow 1} \frac{x-1}{\sqrt{x}-1} =$