

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. Follow instructions very closely: Consider the quadratic function $f(x) = -x^2 + 4x - 3$.

(a) Find the vertex of the parabola $y = f(x)$.

(b) State the opening direction and justify.

(c) Find the x - and y -intercepts of $y = f(x)$.

(d) Roughly sketch the graph of $y = f(x)$ indicating clearly all important points.

2. Sketch the graph of the following piece-wise defined function:

$$g(x) = \begin{cases} -x - 2, & \text{if } x \leq 0 \\ -x^2 + 4x - 3, & \text{if } x > 0 \end{cases}$$