Show all work, clearly and legibly, to receive full credit. Correct spelling, organization of your solution, and proper use of mathematical notation all count. You may use a calculator, but no notes, books, or other resources. Good luck!

1.) (4 pts.) The graph below shows the function $f$. Using the grid in the graph, estimate the values of $f'(-4)$ and $f'(1)$.

$f'(-4)$: line passes through $(-4, -2)$ and $(-1, 3)$ so slope $f'(-4)$ is about $\frac{3 - (-2)}{-1 - (-4)} = \frac{5}{3}$

$f'(1)$, for similar reasons, is about $\frac{0 - 3.5}{5 - 2} = -\frac{3.5}{3} \approx -1.17$

2.) (4 pts.) Explain why $f'(x) = x^2 - 9$ implies that $f$ has exactly two stationary points.

$f$ has stationary points when $f' = 0$.

$f'(x) = 0 \quad \text{when}$

$x^2 - 9 = 0$

$(x-3)(x+3) = 0$

$x = -3, 3 \quad \rightarrow \quad \text{two \ x-values}$

3.) (2 pts.) Let $a = 5$ and $b = -2$. Compute $(a + b)^2$.

$$(5 + (-2))^2 = 3^2 = 9$$