Name: $\qquad$ / 25

There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. Show all work for full credit.

1. [2 points] State the definition of $f^{\prime}(x)$, the derivative of the function $f(x)$.
2. [8 points] Use the definition (above) to find the derivative $f^{\prime}(x)$ when $f(x)=\frac{5}{x+1}$.
3. [3 points] Use the Quotient Rule to find $f^{\prime}(x)$ if $f(x)=\frac{\sin (x)}{x^{2}+1}$. (You do not need to simplify your answer.)
4. [6 points] Find the derivative for each function below. Simplify your answer.
a. $y=2 x^{4.1}-x+\pi^{2}$
b. $y=7 x \cos (x)$
5. [6 points] Assume $C(q)$ is the cost, in dollars, of manufacturing $q$ widgets.
a. Using a complete sentence (or sentences), interpret the meaning of $C(50)=1120$.
b. What are the units of $C^{\prime}(q)$ ?
c. Using a complete sentence (or sentences), interpret the meaning of $C^{\prime}(50)=15$.
