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$\qquad$

Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) We will see later that the derivative of $f(x)=1 / x$ is given by $f^{\prime}(x)=-1 / x^{2}$. Use this to find an equation of the line tangent to the graph of $f$ at the point where $x=2$.
2. (2 points) The table belows gives the values of the function $g$ at selected points. Find a reasonable approximation for $g^{\prime}(1)$.

| $x$ | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $g(x)$ | 1.67 | 1.85 | 2.03 | 2.21 | 2.38 |

3. Consider the function $f$ whose graph is shown below.

$$
y
$$



Referring to the labeled points, find a point at which
(a) $f^{\prime}(x)=0$
(b) $0<f^{\prime}(x)<1$
(c) $f^{\prime}(x)>1$
(d) $f(x)=0$
(e) $f^{\prime}(x)<0$
(f) (1 pt ex cred) $f^{\prime}(x)$ is not defined

