(1.) (2 pts each) True / False--Circle your choice. Circle T only if the statement is always true. [No explanation necessary.]

(a) If a function is differentiable, then it is continuous.       T       F

(b) If a function is continuous, then it is differentiable.       T       F

(c) If $f'(x)$ is increasing, then $f$ is concave up.       T       F

(d) If $f''(x) = -3$, then $f$ is decreasing.       T       F

(e) If $f$ has a critical point at $x=3$, then $f$ has a local maximum or a local minimum at $x=3$.       T       F

(2.) Given:

\[
\begin{align*}
\begin{array}{c}
\text{Given:} \quad r(2) = 2 \quad \text{and} \quad s(2) = 1 \\
r(4) = -1 \quad \text{and} \quad s(4) = 2 \\
r'(2) = 5 \\
r'(4) = -3 \\
s'(2) = 3 \\
s'(4) = 4
\end{array}
\end{align*}
\]

Determine the values indicated below or state clearly what information is needed (and not supplied) to determine the requested value. In each case, first determine a general formula for the derivative function and then find the requested value (if possible). [Circle your answers.]

(3 pts each) Find:

(a) $H'(2)$ if $H(x) = \ln(r(x))$

(b) $H'(2)$ if $H(x) = \frac{s(x)}{r(x)}$

(c) $H'(2)$ if $H(x) = \sqrt{s(x)}$