

Determine the first derivative of the following functions.

Pg 1

①

$$a(x) = e^x$$

$$b(x) = \ln x$$

$$c(x) = \frac{1}{x}$$

$$d(x) = e^{4x}$$

$$e(x) = \ln(5x)$$

$$f(x) = \frac{x}{e^x}$$

$$g(x) = \frac{1}{2} e^{x^2}$$

$$h(x) = \ln \frac{1}{x}$$

$$i(x) = e(\ln x)$$

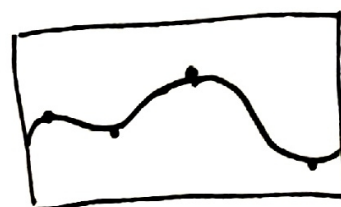
② Find the accumulated amount of money to the nearest penny with the following info. Show the formula substitutions for each problem.
 $P = \$200 \wedge r = 6.5\% \wedge t = 3$ years Compounded semiannually.

$P = \$1500 \wedge R = 4.125\% \wedge t = 2$ years compounded quarterly.

③ Determine algebraically the requested info below. Pg 2
Given $y(x) = \frac{1}{4}x^4 - \frac{5}{3}x^3 + 3x^2 - 2$ Round to the nearest hundredth.

- determine critical values
- determine coordinates of the relative extrema and label as max + min values
- determine the coordinates of the inflection points
- State the open intervals of increase/decrease
- State the open intervals of concavity

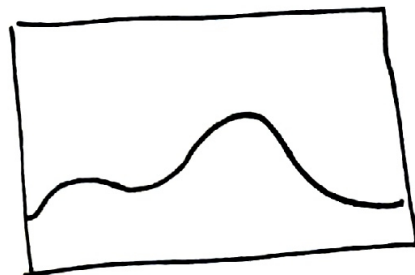
④ Given the graphic, label the points on the graph that represent critical ~~points~~ points with different letters and describe their significance.



⑤ Determine algebraically the requested info below
given $h(x) = x^3 - x^2 - 9x + 35$ Round to the nearest thousandth

- determine the critical values.
- determine the coordinates of the relative extrema label as max/min values.
- determine the coordinates of the inflection points.
- state the open intervals of increase/decrease.
- state the open intervals of concavity.

⑥ Given the graphic, label the points on the graph that represent inflection points with different letters



⑦ Determine ~~the~~ algebraically the equation of the line tangent to the given functions below at the requested value. Round to the nearest hundredth. Pg 4

$$h(x) = x^3 - 6x^2 - 9x + 35 \quad \text{at } x = 2$$

$$b(x) = \ln x \quad \text{at } x = 1$$

⑧ Find all the critical values of $h(x) = \frac{x^2 - 3x + 2}{x + 1}$