

Practice Test 4

BUSA130

This exam is graded out of 15 points. You must do Problems 1 and 2. You may choose 5 of the remaining 6 problems.

1) For how much time (in years) must you invest an initial amount to see it increase by 75% if you are able to secure an annual interest rate of 5%, compounded continuously? (2.5pts)

2) What interest annual interest rate would you need to secure in order to see an initial investment go from \$100 to \$150 in 3.5 years? Assume that the interest is compounded quarterly. (2.5pts).

3) Use logarithmic differentiation to find the derivative of $f(x) = 3x^2(x^2+1)^5(x-1)^2$. (2pts).

4) Find the absolute maximum of the function $f(x) = e^{0.5x^2-x}$ on the interval $[0,5]$. (2pts)

5) A train's initial position is 2 miles down the track, and it is traveling at a speed (in mph) given by the function $f(t) = t + 2$, where t is in hours. Find the position of the train (i.e. how far down the track it is) after four hours. (2pts)

6) Find the value of the definite integral $\int_0^1 2x(x^2 + 1)^4 dx$. (2pts)

7) Find the area bounded between the vertical lines $x = 1$ and $x = 2$, lying above the x -axis, and lying below the graph of the function $f(x) = x^2 + 1$. (2pts)

8) Use midpoints and 4 subintervals to approximate the area under the curve $f(x) = \frac{2x}{x^2-1}$ on the interval $[2,3]$. (2pts)

Bonus: There will be a bonus question worth 0.5pts.