Math 182 Honors Quiz 10 Version A

1. Let S be the curve given by the graph of $f(x) = \ln x$ from $x = 1$ to $x = 2$.

    (i) Compute the arc length of S.

    (ii) Compute the surface area obtained by revolving the curve S about the y-axis.

    (iii) Compute the surface area obtained by revolving the curve S about the x-axis.

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2. Let R be the region enclosed by the curves $y = x^2$ and $y = \sin x$. Let b be the positive real number such that $b^2 = \sin b$.

   (i) Find the area of the region R in terms of b.

   (ii) Find the centroid of R in terms of b.

   (iii) Approximate b using Maple and the command `fsolve(b^2=sin(b),b=1);` or with your calculator or using a different program.