

In **30 minutes** do the following problems, **without help** from any references, computing devices, or people. Write your solutions on either a printout or blank paper. If you use blank paper, do the problems on **1 sheet of paper, in the order given**. Upload a pdf of your solutions to **Gradescope, by midnight**.

Show your work.

1. Set up, **but do not evaluate**, an integral to compute the arclength of the curve

$$y = \ln(1 + x^3), \quad 0 \leq x \leq 5.$$

2. A pile of sand is shaped like a cone, with the top 5 ft above ground level, and the base circular with radius 2 ft, as shown in the diagram. The density of the sand is 80 lbs/ft³. Set up, **and evaluate**, an integral for the work done in creating the pile by lifting the sand from ground level.

