

Show your work.

1. What is the total area of the region enclosed by the graphs of the functions  $y = x^3$  and  $y = 2x - x^3$ ?

A.)  $2/3$     B.)  $3/4$     C.)  $4/5$     D.)  $1$     E.)  $5/4$     F.)  $3/2$

2. What is the area of the region enclosed by the graph of the function  $y = x^3$ , the  $x$ -axis, and the tangent line to the graph of  $y = x^3$  at the point  $(1, 1)$ ?

A.)  $1/3$     B.)  $1/4$     C.)  $1/6$     D.)  $1/8$     E.)  $1/12$     F.)  $1/16$

3. What is the volume of the solid of revolution generated by rotating the region enclosed by the graphs of  $y = x^3$  and  $x = y^3$ , between  $x = 0$  and  $x = 1$ , around the axis of rotation  $y = -1$ ?

A.)  $\frac{17}{14}\pi$     B.)  $\frac{91}{70}\pi$     C.)  $\frac{51}{35}\pi$     D.)  $\frac{17}{15}\pi$     E.)  $\frac{12}{7}\pi$     F.)  $\frac{41}{28}\pi$