Worksheet 6.1

Full Name: _____ Score: _____

1. Sketch the region enclosed by the graphs of the given equations. Then, use a definite integral to find the exact value of the area of the region.

   (a) $y = x^2, \quad y = 4x$

   (b) $y = x^3, \quad y = 9x$

(c) $y = \dfrac{1}{x}, \quad y = 0, \quad x = 1, \quad x = e$

(d) $y = \dfrac{1}{x^2}, \quad y = 0, \quad x = 1, \quad x = 4$

(e) $x = y^2, \quad x = 4$

(f) $x = e^y, \quad y = 0, \quad x = 1, \quad x = e^2$

(g) $y = \sin x, \quad y = 0, \quad x = \dfrac{\pi}{6}, \quad x = \dfrac{\pi}{2}$

(h) $y = \dfrac{1}{1+x^2}, \quad y = 0, \quad x = \dfrac{\sqrt{3}}{3}, \quad x = 1$

(i) $y = \sqrt{x}, \quad y = x^2, \quad x = 2$

(j) $y = \arctan x, \quad y = \dfrac{\pi}{4}, \quad y$-axis