1. Set up integrals (both washers and shells, if possible) that can be used to find the volume of the solid obtained by rotating the region bounded by the curves about the given line:

   (a) $y = 7x^2$, $x = 1$, and $y = 0$, about the x-axis

   (b) $f(x) = e^x$ and $y = 0$, about the x-axis over the interval $[0, 2]$

   (c) $y = 18 - x$, $y = 3x - 6$ and $x = 0$, about the y-axis

   (d) $y = x^2$ and $y = 4x$, about the line $x = 4$

   (e) $y = x^2$ and $y = 5x$, about the line $y = 0$

   (f) $x = 0$, $x = 1$, $y = 0$, and $y = 3 + x^7$, about the x-axis

   (g) $y = x^2$, $x = 3$, and $y = 0$, about the x-axis

   (h) $x = 5y$ and $y^3 = x$ (with $y \geq 0$), about the y-axis

   (i) $y = x^2$ and $y = 1$, about the line $y = 2$

   (j) $x = y^2$ and $x = 2y$, about the line $y = 2$

   (k) $x = y^2$ and $x = 1$, about the line $x = 2$

   (l) $y = x$ and $y = \sqrt{x}$, about the line $y = 1$

2. Find the length of the curves

   (a) $y = x^{1/2} - \dfrac{1}{3}x^{3/2}$ for $1 \leq x \leq 4$

   (b) $y = x^2 - (\ln(x))/8$ for $1 \leq x \leq 2$

3. Find the areas of the surfaces generated by revolving the curves about the indicated axes.

   (a) $y = x^3/9$, $0 \leq x \leq 2$, about the x-axis

   (b) $y = \sqrt{x}$, $3/4 \leq x \leq 15/4$, about the x-axis

   (c) $y = x^{1/2} - \frac{1}{3}x^{3/2}$, $1 \leq x \leq 4$, about the y-axis