

**Section 5.6: Areas Between Curves - Worksheet**

1. For each of the regions described below (i) sketch the region, clearly labeling the curves and their intersection points, (ii) calculate the area of the region using an  $x$ -integral and (iii) calculate the area of the region using a  $y$ -integral.
  - (a) The region to the right of the parabola  $y = 1 - (x - 2)^2$ , below the line  $y = 1$  and to the left of the line  $x - 2y = 3$ .
  - (b) The region bounded by the curves  $y = 2x$  and  $y = \sqrt[3]{32x}$ .
  - (c) The region bounded by the curves  $y = \frac{4}{x+2}$  and  $y = 3 - x$ .
  
2. Calculate the area of the regions described below.
  - (a) The region bounded by the parabola  $x = (y + 3)^2 - 4$  and the line  $x = 3y + 9$ .
  - (b) The region bounded by  $y = \frac{4}{3 + x^2}$  and  $y = 1$ .
  - (c) The region bounded by  $y = 2 \ln(x + 1)$ , the  $x$ -axis and the line  $x = 4$ .
  - (d) The region to the right of the  $y$ -axis, above the graph of  $y = \sec(x)^2$  and below the graph of  $y = 2 \sec(x)$ .