

## 1 Finding the Area Between Two Curves

1. Find the area bounded by  $y = 5x - x^2$  and  $y = x$ .
2. Find the area bounded by  $x = y^2 - 4y$  and  $x = 2y - y^2$ .
3. Sketch the region enclosed by the given curves. Decide whether to integrate with respect to  $x$  or  $y$ . Draw a typical approximating rectangle, then find the area of the region.
  - 3.1.  $y = x + 1, y = 9 - x^2, x = -1, x = 2$
  - 3.2.  $y = x, y = x^2$
  - 3.3.  $y = x^2 - 2x, y = x + 4$
  - 3.4.  $y = x^2, y^2 = x$
  - 3.5.  $y = x^2, y = 4x - x^2$
  - 3.6.  $y = 12 - x^2, y = x^2 - 6$
  - 3.7.  $y = 8 - x^2, y = x^2, x = -3, x = 3$
  - 3.8.  $x = 2y^2, x = 4 + y^2$
  - 3.9.  $4x + y^2 = 12, x = y$
  - 3.10.  $y = |x|, y = x^2 - 2$
4. Find the area of the region enclosed by the curves.
  - 4.1.  $y = 2x - 8x + 10, y = \frac{x^2}{2} - 2x - 1, x = 1, x = 3$
  - 4.2.  $x = 2y^2 + 12y + 19, x = -\frac{y^2}{2} - 4y - 10, y = -3, y = -2$
  - 4.3.  $y = \frac{x^2}{2} - 3x - \frac{1}{2}, y = 3$
  - 4.4.  $y = -\frac{x^3}{2} + 2x^2, y = -x^2 + 4x$