7.1 Area between two curves

Be able to find boundaries & integrals by hand and by calculator

1. Determine the area of the region bounded by $y = x^2 - 4x$ and $y = x - 4$.
   (a) $-\frac{9}{2}$ (b) $\frac{23}{6}$ (c) $\frac{9}{2}$
   (d) $\frac{8}{3}$ (e) None of these

2. Determine the area of the region bounded by $y = -x^2 + 2x + 3$ and $y = 3$.
   (a) $\frac{4}{3}$ (b) $\frac{9}{2}$ (c) $\frac{22}{3}$
   (d) $-\frac{4}{3}$ (e) None of these

3. Find the area of the region bounded by the graphs of $f(x) = 6x - x^2$ and $g(x) = x^2 - 2x$.
   (a) 32 (b) $\frac{20}{3}$ (c) $\frac{64}{3}$
   (d) 128 (e) None of these

4. Find the area of the region bounded by the graphs of $f(x) = x^3 + 4x^2 - 12x$ and $g(x) = -x^2 + 2x$.
   (a) $\frac{3901}{12}$ (b) $\frac{32}{3}$ (c) $\frac{3773}{6}$
   (d) $\frac{1215}{4}$ (e) None of these

5. Find the area of the region bounded by the graphs of $x = y^2 + 4y$ and $x = 0$.

6. Find the area of the region bounded by the graphs of $y = x^3 - 6x^2 + 8x$ and $y = 0$.

7. Find the area of the region bounded by the graph of $y^2 = x^2 - x^4$.