Homework (Lecture 4)

Find each *indefinite* integral

1. $\displaystyle\int \sin^3 x \, \cos x \, dx$

2. $\displaystyle\int \frac{2x^2}{\sqrt{1-4x^3}} dx$

3. $\displaystyle\int x^9 \sin x^{10} \, dx$

Find each *definite* integral

3. $\displaystyle\int_0^3 \frac{x^2+1}{\sqrt{x^3+3x+4}} dx$

4. $\displaystyle\int_{-\pi/4}^{\pi/4} \sin^2 2\theta \, d\theta$

5. $\displaystyle\int_0^1 \left(y^3+6y^2-12y+9\right)^{-1/2}\left(y^2+4y-4\right)dy$

6. Find the total areas of the shaded regions
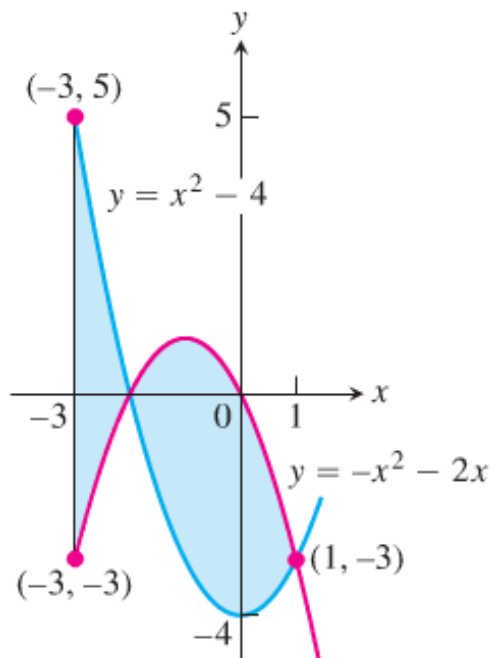
7. Find the area of the region bounded by the graphs of $x=y^2-y$ and $x=2y^2-2y-6$