Worksheet 9
Partial Fractions

1. Integrate $\displaystyle\int \frac{x+1}{x^3 + 3x^2 - 18x}\, dx$

2. Integrate $\displaystyle\int_0^5 \frac{2}{x^2 - 4x - 32}\, dx$

3. Find the area of the region $\mathcal{R}$ indicated in the figure.

$y = f(x)$

$f(x) = \dfrac{x}{x^3 - x}$

$g(x) = \dfrac{1}{x^3 - x}$

$\mathcal{R}$

x

2 4
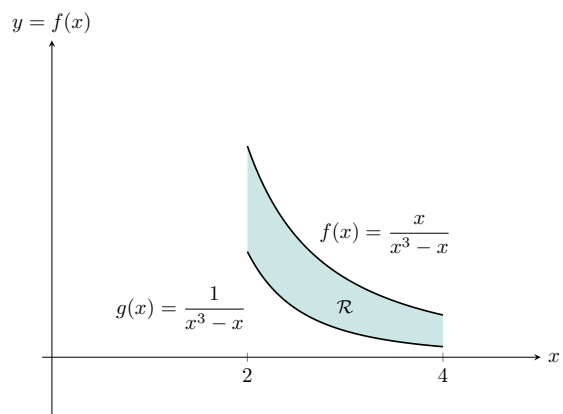
4. Use the table of integrals to evaluate the following. State the number and the general form of the integration formula you use in each case.

(a) $\displaystyle\int \frac{\cos(x)}{\sin^2(x) - 9} \, dx$

(b) $\displaystyle\int \frac{1}{x^2\sqrt{4x^2 + 9}} \, dx$

(c) $\displaystyle\int \frac{e^x}{3 - e^{2x}} \, dx$