MATH 3B Worksheet: Rational functions

(1) $\displaystyle\int \frac{\sin x}{3 + \sin^2 x}\ \mathrm{d}x$

(2) $\displaystyle\int \frac{\cos x}{\sin^3 x - \sin x}\ \mathrm{d}x$

(3) $\displaystyle\int \frac{\sin^2 x}{\cos^2 x + 1}\ \sec^2 x\ \mathrm{d}x$

(4) $\displaystyle\int_{\pi/2}^{\pi/3} \frac{1}{1 + \ \sin x - \cos x}\ \mathrm{d}x$

(5) $\displaystyle\int \frac{1}{1 - \cos x}\ \mathrm{d}x$

(6) $\displaystyle\int \frac{x^4}{x - 1}\ \mathrm{d}x$

(7) $\displaystyle\int \frac{x + 4}{x^2 + 4x + 4}\ \mathrm{d}x$

(8) $\displaystyle\int_1^2 \frac{1}{x(x^2 + 4)^2}\ \mathrm{d}x$

(9) $\displaystyle\int \frac{x^2 - 3x + 7}{(x^2 - 4x + 6)^2}\ \mathrm{d}x$

(10) $\displaystyle\int \frac{e^{2x}}{e^{2x} + 3e^x + 2}\ \mathrm{d}x$