6.2.20 $I = \int \frac{dx}{x^3+2x^2+2x}$.

$$\frac{1}{x(x^2+2x+2)} = \frac{A}{x} + \frac{Bx+C}{x^2+2x+2}$$

$$= \frac{A(x^2+2x+2) + (Bx+C)x}{x(x^2+2x+2)}$$

$x^2: A+B=0$ $\quad A = 1/2$

$x^1: 2A+C=0$ $\quad B = -1/2$

$x^0: 2A=1$ $\quad C = -1$

$$I = \frac{1}{2}\int \frac{dx}{x} + \int \frac{-\frac{1}{2}x-1}{x^2+2x+2}\,dx$$

$$= \frac{1}{2}\ln|x| - \frac{1}{2}\int \frac{x+1}{(x+1)^2+1}\,dx - \frac{1}{2}\int \frac{dx}{(x+1)^2+1}$$

$$= \frac{1}{2}\ln|x| - \frac{1}{4}\ln((x+1)^2+1) - \frac{1}{2}\arctan(x+1) + C.$$