7. $\int_0^1 (x^3-3x^2+2x) + \int_1^2 (x^3-3x^2+2x)$

$$\left[\frac{1}{4}x^4 - x^3 + x^2\right]_0^1 + \left[\frac{1}{4}x^4 - x^3 + x^2\right]_1^2$$

$$\left(\frac{1}{4}(1)^4 - (1)^3 + (1)^2\right) - \left(\frac{1}{4}(0)^4 - (0)^3 + (0)^2\right)$$

$= \frac{1}{4}$ square units

$$\left(\frac{1}{4}(2)^4 - (2)^3 + (2)^2\right) - \left(\frac{1}{4}(1)^4 - (1)^3 + (1)^2\right)$$

$\left|-\frac{1}{4}\right| = \frac{1}{4}$ square units

Area $= \frac{1}{4} + \frac{1}{4}$

$= \frac{1}{2}$ square units

2. $\int \frac{x^2}{(x^3+1)^2} dx$

let $u = x^3 + 1$

$\frac{du}{dx} = 3x^2$

$dx = \frac{du}{3x^2}$

$= \int \frac{x^2}{u^2} \cdot \frac{du}{3x^2}$

$\frac{1}{3} \int \frac{1}{u^2} du$

$\frac{1}{3} \int u^{-2} du$

$= \frac{-1}{3u} + C$

$= \frac{-1}{3(x^3+1)} + C$