

Blatt 2 A 3 (a)

$$-u''(x) = x^2 - x$$

$$-u'(x) = \frac{1}{3}x^3 - \frac{1}{2}x^2 + C_1$$

$$+u(x) = -\frac{1}{12}x^4 + \frac{1}{6}x^3 + C_1x + C_2$$

$$u(0) = C_2 = 1$$

$$u(1) = -\frac{1}{12} + \frac{1}{6} + C_1 + 1 = -1$$

$$\Leftrightarrow C_1 = -\frac{24}{12} + \frac{1}{12} - \frac{2}{12} = \frac{-25}{12}$$

$$\Rightarrow \boxed{u(x) = -\frac{1}{12}x^4 + \frac{1}{6}x^3 - \frac{25}{12}x + 1}$$

$$(b) \quad u(0) = C_2 = 0$$

$$u'(0) = C_1 = 1$$

$$\Rightarrow \boxed{u(x) = -\frac{1}{12}x^4 + \frac{1}{6}x^3 + x}$$