$$F(x) = \int_{-\infty}^{x} f(t)\, dt$$

For $x \leq -1$:

$$F(x) = 0$$

For $-1 < x \leq 0$:

$$F(x) = \int_{-1}^{x} (1+t)\, dt$$

$$F(x) = \left[ t + \frac{t^2}{2} \right]_{-1}^{x}$$

$$F(x) = x + \frac{x^2}{2} + \frac{1}{2}$$

For $0 < x \leq 1$:

$$F(x) = \int_{0}^{x} (1-t)\, dt$$

$$F(x) = \left[ t - \frac{t^2}{2} \right]_{-1}^{x}$$

$$F(x) = 1 + x - \frac{x^2}{2}$$

For $x > 1$:

$$F(x) = 1$$

$$F(x) = \begin{cases} 0, & x \leq -1 \\ x + \frac{x^2}{2} + \frac{1}{2}, & -1 < x \leq 0 \\ 1 + x - \frac{x^2}{2}. & 0 < x \leq 1 \\ 1, & x > 1 \end{cases}$$

$$\int_{-1}^{0} a(1+x)\,dx + \int_{0}^{1} a(1-x)\,dx = 1$$

$$a\left(\int_{-1}^{0} 1+x\,dx + \int_{0}^{1} 1-x\,dx\right) = 1$$

$$a\left(\left([x]_{-1}^{0} + \left[\frac{1}{2}x^2\right]_{-1}^{0}\right) + \left([x]_{0}^{1} + \left[\frac{1}{2}x^2\right]_{0}^{1}\right)\right) = 1$$

$$a(0-(-1)+0-\frac{1}{2}+1-0-(\frac{1}{2}-0)) = 1$$

$$a(1-\frac{1}{2}+1-\frac{1}{2}) = 1$$

$$a(1) = 1$$

$$a = 1$$