

lista 26

$$18) \int e^{-\theta} \cos 2\theta \, d\theta$$

$$u = \cos 2\theta$$

$$dv = e^{-\theta} \, d\theta$$

$$du = -2 \sin 2\theta \, d\theta$$

$$v = \int e^{-\theta} \, d\theta \Rightarrow v = -e^{-\theta}$$

$$\int u \, dv = uv - \int v \, du$$

$$\int \cos 2\theta e^{-\theta} \, d\theta = \cos 2\theta (-e^{-\theta}) - \int -e^{-\theta} (-2 \sin 2\theta) \, d\theta$$

$$\int \cos 2\theta e^{-\theta} \, d\theta = -e^{-\theta} \cos 2\theta - 2 \int e^{-\theta} \sin 2\theta \, d\theta$$

$$I = \int e^{-\theta} \sin 2\theta \, d\theta$$

$$u = \sin 2\theta \quad dv = e^{-\theta} \, d\theta$$

$$du = 2 \cos 2\theta \, d\theta \quad v = -e^{-\theta}$$

$$I = \int e^{-\theta} \sin 2\theta \, d\theta = \sin 2\theta (-e^{-\theta}) - \int -e^{-\theta} 2 \cos 2\theta \, d\theta$$

$$I = -\sin 2\theta e^{-\theta} + 2 \int \cos 2\theta e^{-\theta} \, d\theta$$

$$\int \cos 2\theta e^{-\theta} \, d\theta = -e^{-\theta} \cos 2\theta - 2(-\sin 2\theta e^{-\theta} + 2 \int \cos 2\theta e^{-\theta} \, d\theta)$$

$$\int \cos 2\theta e^{-\theta} \, d\theta = -e^{-\theta} \cos 2\theta + 2 \sin 2\theta e^{-\theta} - 4 \int \cos 2\theta e^{-\theta} \, d\theta$$

$$\int \cos 2\theta e^{-\theta} \, d\theta + 4 \int \cos 2\theta e^{-\theta} \, d\theta = -e^{-\theta} \cos 2\theta + 2 \sin 2\theta e^{-\theta}$$

$$5 \int \cos 2\theta e^{-\theta} \, d\theta = e^{-\theta} (-\cos 2\theta + 2 \sin 2\theta)$$

$$\int \cos 2\theta e^{-\theta} \, d\theta = \frac{e^{-\theta}}{5} (-\cos 2\theta + 2 \sin 2\theta) + C$$