we can write

$$T_{\mu_1\ldots\mu_r\lambda_1\ldots\lambda_s} = \frac{1}{i^{r+s}}\frac{\partial}{\partial a_1^{\mu_1}}\cdots\frac{\partial}{\partial a_1^{\mu_r}}\frac{\partial}{\partial a_2^{\lambda_1}}\cdots\frac{\partial}{\partial a_2^{\lambda_s}}\exp\left[i\left(a_1\cdot k_1 + a_2\cdot k_2\right)\right]\Bigg|_{a_1=a_2=0} . \tag{2.46}$$

Now, consider the integral

$$G^{(d)}\left(q^2\right) = \int\frac{d^dk_1}{\left(2\pi\right)^d}\int\frac{d^dk_2}{\left(2\pi\right)^d}\frac{\exp\left[i\left(a_1\cdot k_1 + a_2\cdot k_2\right)\right]}{c_1^{n_1}c_2^{n_2}c_3^{n_3}c_4^{n_4}c_5^{n_5}} . \tag{2.47}$$

To evaluate this integral we will use the following identity [110, 118]

$$\frac{1}{\left(k^2-m^2\right)^n} = \frac{1}{i^n\,\Gamma\left(n\right)}\int_0^\infty d\alpha\,\alpha^{n-1}\exp\left[i\alpha\left(k^2-m^2\right)\right] . \tag{2.48}$$

The integration variable α is called an alpha parameter and serves a similar purpose to the Feynman parameters introduced earlier. The resulting k_1 and k_2 loop integrals can be evaluated using the integral [118]

$$\int d^dk\exp\left[i\left(Ak^2+2q\cdot k\right)\right] = i\left[\frac{\pi}{iA}\right]^{\frac{d}{2}}\exp\left[-\frac{iq^2}{A}\right] . \tag{2.49}$$

Doing this, the result is

$$G^{(d)}\left(q^2\right) = \frac{i^{2-d}}{(4\pi)^d}\prod_{i=1}^{5}\frac{1}{i^{n_i}\,\Gamma\left(n_i\right)}\int_0^\infty\frac{d\alpha_i}{\left[D\left(\alpha\right)\right]^{\frac{d}{2}}}\alpha_i^{n_i-1}\exp\left[i\left(\frac{Q\left(\alpha_i\,,a_1\,,a_2\right)}{D\left(\alpha\right)}-\sum_{j=1}^{5}\alpha_j m_j^2\right)\right] . \tag{2.50}$$

The functions $D\left(\alpha\right)$ and $Q\left(\alpha\,,a_1\,,a_2\right)$ are

$$D\left(\alpha\right) = \alpha_5\left(\alpha_1+\alpha_2+\alpha_3+\alpha_4\right) + \left(\alpha_1+\alpha_3\right)\left(\alpha_2+\alpha_4\right) , \tag{2.51}$$

$$\begin{aligned} Q\left(\alpha_i\,,a_1\,,a_2\right) = {} & \left[\left(\alpha_1+\alpha_2\right)\left(\alpha_3+\alpha_4\right)\alpha_5 + \alpha_1\alpha_2\left(\alpha_3+\alpha_4\right) + \alpha_3\alpha_4\left(\alpha_1+\alpha_2\right)\right]q^2 \\ & + \left(a_1\cdot q\right)Q_1 + \left(a_2\cdot q\right)Q_2 + a_1^2 Q_{11}^2 + a_2^2 Q_{22}^2 + \left(a_1\cdot a_2\right)Q_{12} , \end{aligned} \tag{2.52}$$