Homework: Particle Physics

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1.
$$\int_{-\infty}^{\infty} dk^0 \delta(k^2 - m^2) \theta(k^0) = \int_{0}^{\infty} \frac{dk^{02}}{2k^0} \delta(k^{02} - \omega^2) = \frac{1}{2\omega}$$