1.4. Conductance Formula

1.4a. In obtaining the expression for the conductance

\[
\frac{I}{V} = \int_{-\infty}^{+\infty} dE \, G(E) \left( \frac{\partial f_0(E)}{\partial E} \right)
\]

from the current expression

\[
I = \frac{1}{q} \int dE \, G(E) \left( f_1(E) - f_2(E) \right)
\]

the key assumption is that

(a) the applied voltage \( V \) is much less than \( kT \)
(b) the applied voltage \( V \) is much less than \( kT / q \)
(c) the applied voltage \( V \) is much greater than \( kT / q \)
(d) the applied voltage \( V \) is much less than the bandgap
(e) none of the above

1.4b. The function \( F(E) \) shown here is

(a) the Fermi function, \( f_0(E) \)
(b) \( 1 - f_0(E) \)
(c) \( 1 + f_0(E) \)
(d) \( kT \, f_0 / E \)
(e) \( kT \, f_0 / E \)