32. (a) At $T = 300\,\mathrm{K}$

$$f = \frac{3kT}{2E_F} = \frac{3(8.62 \times 10^{-5}\,\mathrm{eV/K})(300\,\mathrm{K})}{2(7.0\,\mathrm{eV})} = 5.5 \times 10^{-3} \ .$$

(b) At $T = 1000\,\mathrm{K}$,

$$f = \frac{3kT}{2E_F} = \frac{3(8.62 \times 10^{-5}\,\mathrm{eV/K})(1000\,\mathrm{K})}{2(7.0\,\mathrm{eV})} = 1.8 \times 10^{-2} \ .$$

(c) Many calculators and most math software packages (here we use MAPLE) have built-in numerical integration routines. Setting up ratios of integrals of Eq. 42-7 and canceling common factors, we obtain

$$frac = \frac{\int_{E_F}^{\infty} \sqrt{E}/(e^{(E-E_F)/kT} + 1)\,dE}{\int_0^{\infty} \sqrt{E}/(e^{(E-E_F)/kT} + 1)\,dE}$$

where $k = 8.62 \times 10^{-5}\,\mathrm{eV/K}$. We use the Fermi energy value for copper ($E_F = 7.0\,\mathrm{eV}$) and evaluate this for $T = 300\,\mathrm{K}$ and $T = 1000\,\mathrm{K}$; we find $frac = 0.00385$ and $frac = 0.0129$, respectively.