**Samples** **Continuous compounding SOLUTIONS**

**1.** Let $B$ be the amount of the bill, $I$ be the amount he needs to invest, $r$ be the interest rate and $t$ be the number of years. Then $B = Ie^{rt}$ so $I = \dfrac{B}{e^{rt}}$, so $I = Be^{-rt}$. Then

$$\begin{aligned} I &= 200e^{-0.06\times 8} \\ &= 200e^{-0.48} \\ &\approx 123.76 \end{aligned}$$

Hence he needs to invest approximately \$123.76 .

**2.** Let $B$ be the amount of the bill, $I$ be the amount he needs to invest, $r$ be the interest rate and $t$ be the number of years. Then $B = Ie^{rt}$ so $I = \dfrac{B}{e^{rt}}$, so $I = Be^{-rt}$. Then

$$\begin{aligned} I &= 1000e^{-0.07\times 18} \\ &= 1000e^{-1.26} \\ &\approx 283.65 \end{aligned}$$

Hence he needs to invest approximately \$283.65 .

**3.** Let $B$ be the amount of the bill, $I$ be the amount he needs to invest, $r$ be the interest rate and $t$ be the number of years. Then $B = Ie^{rt}$ so $I = \dfrac{B}{e^{rt}}$, so $I = Be^{-rt}$. Then

$$\begin{aligned} I &= 900e^{-0.05\times 10} \\ &= 900e^{-0.5} \\ &\approx 545.88 \end{aligned}$$

Hence he needs to invest approximately \$545.88 .