

$$\underline{6} \quad f(x) = 600$$

$$t = 20$$

$$r = 4\%$$

$$(a) \text{ Present value} = \int_0^{20} 600 e^{-0.04x} dx$$

$$= 600 \int_0^{20} e^{-0.04x} dx$$

$$= 600 \left. \frac{e^{-0.04x}}{-0.04} \right|_0^{20}$$

$$= \frac{600}{-0.04} [e^{-0.8} - e^0] = \frac{600}{-0.04} [e^{-0.8} - 1]$$

$$= \boxed{\$8,260}$$

$$(b) \text{ Accumulated amount of money} = e^{rt}. \text{ Present value}$$

$$= e^{0.04 \cdot 20} \cdot 8260$$

$$= e^{0.8} \cdot 8260$$

$$= \boxed{\$18,381}$$

$$\underline{7} \quad f(x) = 1500 e^{0.02x}$$

$$t = 15$$

$$r = 4\%$$

$$(a) \text{ Present value} = \int_0^{15} 1500 e^{0.02x} e^{-0.04x} dx$$

$$= 1500 \int_0^{15} e^{-0.02x} dx$$

$$= 1500 \left. \frac{e^{-0.02x}}{-0.02} \right|_0^{15}$$

$$= \frac{1500}{-0.02} [e^{-0.3} - 1] = \boxed{\$19,437}$$