15.1

#11 a) formula for continuous compounding

$$M = M_0 e^{rt}$$

$$M = (\$6000)\, e^{(0.05)t}$$

$$M = 6000\, e^{(0.05)(7)} = \$8514.41$$

b) $t = t$

$$M = 6000\, e^{0.05t}$$

c) $M = M_0 e^{rt}$

$$\frac{d}{dt} M = \frac{d}{dt}(M_0 e^{rt}) \qquad M_0 \text{ is constant!}$$

$$\frac{dM}{dt} = M_0 e^{rt}\left(\frac{d}{dt} rt\right)$$

$$= M_0 e^{rt}(r) = (0.05)(6000)\, e^{0.05t}$$

$$= 300 e^{0.05t}$$

d) True!

$$M = 6000\, e^{0.05t}$$

$$0.05M = (0.05)\, 6000\, e^{0.05t}$$

$$= (0.05 \times 6000)\, e^{0.05t}$$

$$= 300 e^{0.05t} = \frac{dM}{dt}$$ ✓

e) $M = 6000\, e^{0.05t} = 6000 \times (e^{0.05})^t$

$$= 6000 \times (1.051)^t$$

$$= C\, a^t$$