

f) after 1 year, $t=1$

$$M = 6000 e^{0.05(1)} = 6307.62$$

$$\% \text{ growth} = \frac{\$6307.62}{\$6000} = \boxed{5.1\%}$$

#13

4% interest compounded continuously:

$$M = M_0 e^{0.04t} = M_0 (e^{0.04})^t = M_0 (1.041)^t$$

4.2% compounded annually

$$M = M_0 \left(1 + \frac{r}{n}\right)^{nt}$$

$$M = M_0 \left(1 + \frac{0.042}{1}\right)^{1t} = M_0 (1.042)^t$$

Bigger!

Better Deal!

#14

$$M(t) = M_0 e^{rt}$$

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

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

$$= M_0 e^{rt} (r)$$

$$= rM$$

(substitute $M = M_0 e^{rt}$)

✓