

1. For 5% APY,  $r=0.05$  and using  $P=\$500$ , the asymptote finder gives  $\$525.64$ . So we earned  $\$25.64$  in interest which corresponds to an effective interest rate of  $25.64/500=0.05127$  or 5.127%.

Note: this could also be computed more directly by using  $P=1$  and getting an asymptote of 1.05127 and reading 5.127% directly from this.

For 12% APY, (using  $P=1$ ), the asymptote finder gives 1.1275 which corresponds to a 12.75% effective interest rate.

Note: In the limit, the multiplier will always tend toward  $e^r$  so that the effective interest rate will always be  $(e^r - 1) \cdot 100\%$ .

2. For  $C=20 \mu\text{F}$ ,  $V=12 \text{ V}$ , and  $R=5 \Omega$ , the asymptote finder gives 240 as  $t \rightarrow \infty$ , so the limiting value of the charge differential is 240 Coulombs.

For  $C=150 \mu\text{F}$ ,  $V=120 \text{ V}$ , and  $R=75 \Omega$ , the asymptote finder gives 18,000 as  $t \rightarrow \infty$ , so the limiting value of the charge differential is 18,000 Coulombs.

3. If your asymptote finder does not detect any asymptotes, it is working properly.

Your asymptote finder may falsely detect an asymptote as  $x \rightarrow \infty$ , since the function grows at a slower and slower pace, so eventually, differences will be very small. However, if you put enough distance between your test points, you will see that the differences do not *stay* small.