

Section/Lesson Title: LOANSMaterials: WSHW# 5 & WS

Reflections:

I LOANS

$$L = \text{PMT} \left[ \frac{1 - (1+r)^{-n}}{r} \right]$$

- ①  $L = \$9000$  4 yrs 6% compounded monthly  
WHAT WILL THE PAYMENT BE?

$$9000 = \text{PMT} \left[ \frac{1 - (1.005)^{-48}}{.005} \right] \quad \boxed{\text{PMT} = \$211.37}$$

- ② ACCELERATE PAYMENT

$L = \$140,000$  30-yr loan 10.9% monthly payment = \$1312.14  
You plan to make \$1500 monthly payment

- a) How long will it take now?

$$140,000 = 1500 \left[ \frac{1 - 1.009^{-n}}{.009} \right]$$

$$93.3333 = \frac{1 - 1.009^{-n}}{.009}$$

$$.84 = 1 - 1.009^{-n}$$

$$1.009^{-n} = .16$$

$$-n = \frac{\ln(.16)}{\ln(1.009)}$$

$$n = 204.54 \rightarrow \# \text{ of monthly payments}$$

$$\frac{205}{12} = 17.08 \text{ years} \rightarrow \text{cut off almost } \underline{17 \text{ years!}}$$

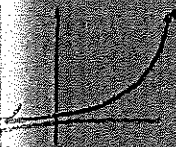
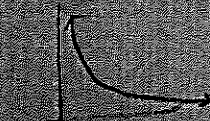
- b) How much will you save by accelerating payment?

$$\text{TOTAL PMO} = 1500 \times 205 = \$307,500$$

$$\text{w/o extra payment} \rightarrow \text{TOTAL} = 1312.14 \times 360 = \$472,370.40$$

$$472,370.4 - 307,500 = \$164,870.40 \text{ saved!}$$

Talk About

Compound, then  
Fast!

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