Section 5.2 Compound Interest

$$FV = P(1+i)^{n}$$

- FV: Future Value
- P: Present Value
- i: periodic interest rate $r \div$ (# of compoundings per year)
- n: total # of compoundings = compoundings per year × # of years

ex: Suppose Tom & Betty let their $1000 investment earn money for 20 years compounded quarterly at 8%. What is the future value after 20 years?

$P = 1000$

$i = \frac{.08}{4}$ (quarterly 4× per year)

$n = 4 \cdot 20 = 80$

$FV = P(1+i)^{n}$

$FV = 1000\left(1+\frac{.08}{4}\right)^{80}$

$1000(1+.08/4)\ \hat{}\ 80$ enter

$FV = \$4,875.44$

ex: simple interest

$P = 450000$

$t = 213$ years

1777 → 1990

$r = .06$

$FV = P(1+rt)$

$FV = 450000(1+.06 \cdot 213)$

$FV = \$6,201,000$

compound monthly

# of compoundings per year = 12

$i = \frac{.06}{12}$

$n = 12 \cdot 213 = 2556$

$FV = P(1+i)^{n}$

$FV = 450000\left(1+\frac{.06}{12}\right)^{2556}$

$FV = \$154,762,723,400$

1.5476 E 11

move decimal 11 right

Compounded	# of compoundings per year
Annually	1
Semiannually	2
Quarterly	4
Monthl	12
Bi Monthly	24
Bi weekly	26
Daily	365

#5 p320

$P = ?$

$r = 7\frac{3}{4}\%$

annually $\quad i = \frac{.0775}{1}$

$FV = 2000$

$t = 3$ years $\Rightarrow n = 1 \cdot 3 = 3$

$FV = P(1+i)^n$

$2000 = P(1+.0775)^3$

$2000 = P(1.251)$

$P = \$1,598.74$

p 324-325

11, 13, 15, 23, 35, 37

$(1+.0775)\wedge 3$ enter

2000/ANS enter