PSTAT 171 HW 4

3.6) 1) a) $\frac{1516}{(1+.06)} + \frac{1516}{(1+.06)^2}$

$+ \frac{1516}{(1+.06)^3} + \frac{1516}{(1+0.06)^4}$

$= \$ 5253.10$

b) $\frac{822}{(1+.06)} + \frac{822}{(1+.06)^2}$

$+ \frac{822}{(1+.06)^3} + \frac{1516}{(1+.06)^4} + \frac{1516}{(1+.06)^5}$

$+ \frac{1516}{(1+.06)^6} + \frac{1516}{(1+.06)^7}$

$= \$ 6607.82$

3. $(1+.06)^{1/12} - 1 = .0048675$

$= \frac{1692\left(1-(1+.0048675)^{-80}\right)}{.0048675}$

$= \frac{1692(1-(1.0048675)^{-80})}{.0048675}$

$= 111894.78$

$258000.00 - 111894.78$

$= 146105.22$

7) $\frac{14508.97(.009)}{1-(1.004)^{-24}}$

$= 635.23$

$14508.97(1.004)^9 - 635.23(1.004)(1.004)^7$

$= 9865.56$

$\frac{9865.56(.004)}{1-(1.004)^{-15}}$

$= \$678.95$

5.0) 1) The Johnsons will use std. deduction if itemized deduction is less than the standard, which in this case is $9700. This means standard deduction should be greater than itemized deductions. Total itemized deductions must be less than std. deductions and interest, which must be less than $9700 and interest expense. Because of this, std deduction will be taken if total expense for the year is less than 2457. After doing all calculations the lowest value of N will be in year 1990, specifically if the loan was in April 1990.

5.2) 1)

Time	Payment	Int. in Payment	Principal in Payment	Balance aft. Payment
0	[illegible]	[illegible]	[illegible]	29119.00
1	8000.00	1223.00	6777.00	22342.00
3	14350.14	1916.14	12434.00	9908.00
4	10324.14	416.14	9908.00	0.00

3) 14 → $400 + 45(13) = 985$

13 → $985\, a_{\overline{12}|.06} + \frac{45}{.06}(a_{\overline{12}|.06} - 12v^{12})$

$= 11370.45$

$.04(11370.45)$

$= 454.82$

$985 - 454.82 = \$530.18$

4) a) $60\left[988.45\left(\left(1-\left(\frac{1}{1+\frac{.06}{12}}\right)^{5\cdot12}\right)\right)\right] + 988.45\left(\frac{1-\left(1+\frac{.075}{12}\right)^{24}}{24}\right)$

$= 77884.78$

b) $78383.33 \times (.075/12)$

$= \$489.90$

c) $988.45\left(1-60\left(\frac{1}{1+\left(\frac{.06}{12}\right)^{12.5}}\right)\right)+988.45\left(\frac{1-\frac{.075}{12}^{10\cdot12}}{120}\right)$

$= 104966.37$

$117134.80 - 104966.37 = 12168.43$

Total @ end of 15 yrs is 13156.88

5.3) 1)

Time in Years	Int on Loan	Sinking Fund Dep.	Interest on S.F	S.L Bal after Deposit	Net Balance on Loan
0	0.00	0.00	0.00	0.00	14000.00
1	889.00	5200.00	0.00	5200.00	8800.00
2	889.00	3000.00	218.40	8418.40	5581.60
4	1834.45	4859.60	722.00	14000.00	0.00

2) $1.0035^{6} - 1 = 2.118\%$

$$\frac{D\left(1.02118\right)^{\frac{1}{6}} - 1}{1.02118 - 1} + \frac{D\left(1.02118\right)^{10} - 1}{1.02118 - 1} = 238000$$

$$\frac{D(.6317)}{.02118} = 238000$$

$$D(.6317) = \frac{238000}{.02118}$$

$$D = 7980.98$$

5): $$\frac{10000\left(.05 \times 62499\right)}{1 - \left(1/1.0562499\right)^{12}} = 10000i + \frac{10000(.04)}{(1.04)^{12-1}}$$

$$\frac{\left(\frac{10000\left(.05 \times 62499\right)}{1 - \frac{1}{1.0562499^{12}}} - \frac{10000(.04)}{(1.04)^{12-1}}\right)}{10000} = i$$

$$i = 5.0285\%$$