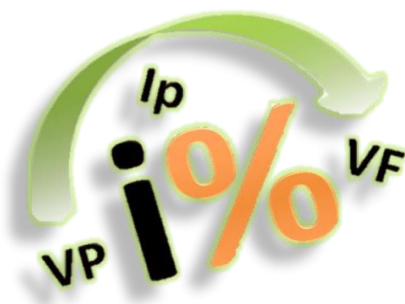


Anexo 8



GRADIENTES

MATEMATICAS FINANCIERAS

TRABAJO REALIZADO POR:

MARÍA ISABEL LÓPEZ LEON

FÓRMULAS

POSPAGABLE

$$Mga = \left(Rp_1 + \frac{ga}{\frac{i}{m}} \right) \left[\frac{(1 + \frac{i}{m})^n - 1}{\frac{i}{m}} \right] - \frac{n * ga}{\frac{i}{m}}$$

PREPAGABLE

$$Mga = \left(Rp_1 + \frac{ga}{\frac{i}{m}} \right) \left[\left(1 + \frac{i}{m}\right) \frac{(1 + \frac{i}{m})^n - 1}{\frac{i}{m}} \right] - \frac{n * ga}{\frac{i}{m}}$$

POSPAGABLE

$$VAga = \left[\left(Rp_1 + \frac{ga}{\frac{i}{m}} \right) \left[\frac{(1 + \frac{i}{m})^n - 1}{\frac{i}{m}} \right] - \frac{n * ga}{\frac{i}{m}} \right] \left(1 + \frac{i}{m}\right)^{-n}$$

PREPAGABLE

$$VAga = \left[\left(Rp_1 + \frac{ga}{\frac{i}{m}} \right) \left[\left(1 + \frac{i}{m}\right) \frac{(1 + \frac{i}{m})^n - 1}{\frac{i}{m}} \right] - \frac{n * ga}{\frac{i}{m}} \right] \left(1 + \frac{i}{m}\right)^{-n}$$

POSPAGABLE

$$Mgg = Rp_1 \left[\frac{(1 + \frac{i}{m})^n - (1 + gg)^n}{\frac{i}{m} - gg} \right]$$

PREPAGABLE

$$Mgg = Rp_1 \left(1 + \frac{i}{m}\right) \left[\frac{(1 + \frac{i}{m})^n - (1 + gg)^n}{\frac{i}{m} - gg} \right]$$

POSPAGABLE

$$Rp_1 = \frac{Mgg}{\left[\frac{(1 + \frac{i}{m})^n - (1 + gg)^n}{\frac{i}{m} - gg} \right]}$$

PREPAGABLE

$$Rp_1 = \frac{Mgg}{\left[\frac{(1 + \frac{i}{m})^n - (1 + gg)^n}{\frac{i}{m} - gg} \right] \left(1 + \frac{i}{m}\right)}$$

1.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$350.00	ga	\$30.00
i	11.5%	gg	1.6%
	exacto		
m	c/23 días	n	72 cuotas

POSPAGABLE

$$\begin{aligned}
 Mga &= \left(\$350.00 + \frac{\$30.00}{.0072465} \right) \left[\frac{(1 + .0072465)^{72} - 1}{.0072465} \right] - \frac{72 * \$30.00}{.0072465} \\
 &= (\$4,489.93)(94.0872673) - \$298,074.93 = \$422,445.21 - \$298,074.93 \\
 &= \$124,370.28
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Mga &= \left(\$350.00 + \frac{\$30.00}{.0072465} \right) \left[(1 + .0072465) \frac{(1 + .0072465)^{72} - 1}{.0072465} \right] - \frac{72 * \$30.00}{.0072465} \\
 &= (\$4,489.93)(94.7690707) - \$298,074.93 = \$425,506.46 - \$298,074.93 \\
 &= \$127,431.53
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 VAga &= \left[\left(\$350.00 + \frac{\$30.00}{.0072465} \right) \left[\frac{(1 + .0072465)^{72} - 1}{.0072465} \right] \right. \\
 &\quad \left. - \frac{72 * \$30.00}{.0072465} \right] (1 + .0072465)^{-72} \\
 &= [(\$4,489.93)(94.0872673) - \$298,074.93](.5945998) \\
 &= [\$124,370.28](.5945998) = \$73,950.54
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 VAga &= \left[\left(\$350.00 + \frac{\$30.00}{.0072465} \right) \left[(1 + .0072465) \frac{(1 + .0072465)^{72} - 1}{.0072465} \right] \right. \\
 &\quad \left. - \frac{72 * \$30.00}{.0072465} \right] (1 + .0072465)^{-72} \\
 &= [(\$4,489.93)(94.7690707) - \$298,074.93](.5945998) \\
 &= [\$127,431.53](.5945998) = \$75,770.76
 \end{aligned}$$

POSPAGABLE

$$Mgg = \$350.00 \left[\frac{(1 + .0072465)^{72} - (1 + .016)^{72}}{.0072465 - .016} \right] = (\$350.00) \frac{1.6818033 - 3.1357900}{-.0087535}$$

$$= (\$350.00) \frac{-1.4539867}{-.0087535} = (\$350.00)(166.1034672) = \$58,136.21$$

PREPAGABLE

$$Mgg = \$350.00(1 + .0072465) \left[\frac{(1 + .0072465)^{72} - (1 + .016)^{72}}{.0072465 - .016} \right]$$

$$= (\$352.54) \frac{1.6818033 - 3.1357900}{-.0087535} = (\$352.54) \frac{-1.4539867}{-.0087535}$$

$$= (\$352.54)(166.1034672) = \$58,557.50$$

POSPAGABLE

$$Rp_1 = \frac{\$58,136.21}{\left[\frac{(1 + .0072465)^{72} - (1 + .016)^{72}}{.0072465 - .016} \right]} = \frac{\$58,136.21}{\left[\frac{1.6818033 - 3.1357900}{-.0087535} \right]} = \frac{\$58,136.21}{\frac{-1.4539867}{-.0087535}}$$

$$= \frac{\$58,136.21}{166.1034672} = \$350.00$$

PREPAGABLE

$$Rp_1 = \frac{\$58,557.50}{\left[\frac{(1 + .0072465)^{72} - (1 + .016)^{72}}{.0072465 - .016} \right] (1 + .0072465)}$$

$$= \frac{\$58,557.50}{\left[\frac{1.6818033 - 3.1357900}{-.0087535} \right] (1.0072465)} = \frac{\$58,557.50}{\frac{-1.4539867}{-.0087535} (1.0072465)}$$

$$= \frac{\$58,557.50}{(166.1034672)(1.0072465)} = \frac{\$58,557.50}{167.307136} = 349.9999999 = \$350.00$$

2.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$288.00	ga	\$52.00
i	8%	gg	3.3%
m	c/30 días	n	24

POSPAGABLE

$$\begin{aligned}
 Mga &= \left(\$288.00 + \frac{\$52.00}{.0065753} \right) \left[\frac{(1 + .0065753)^{24} - 1}{.0065753} \right] - \frac{24 * \$52.00}{.0065753} \\
 &= (\$8,196.38)(\$25.91) - 189801.2258 = \$212,330.55 - \$189,801.23 \\
 &= \$22,529.32
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Mga &= \left(\$288.00 + \frac{\$52.00}{.0065753} \right) \left[(1 + .0065753) \frac{(1 + .0065753)^{24} - 1}{.0065753} \right] - \frac{24 * \$52.00}{.0065753} \\
 &= (\$8,196.38)(26.0757271) - \$189,801.23 = \$213,726.68 - \$189,801.23 \\
 &= \$23,925.46
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 VAga &= \left[\left(\$288.00 + \frac{\$52.00}{.0065753} \right) \left[\frac{(1 + .0065753)^{24} - 1}{.0065753} \right] \right. \\
 &\quad \left. - \frac{24 * \$52.00}{.0065753} \right] (1 + .0065753)^{-24} \\
 &= [(\$8,196.38)(25.9053914) - \$189,801.23](.8544556) \\
 &= (\$212,330.55 - \$189,801.23)(.8544556) = \$19,250.30
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 VAga &= \left[\left(\$288.00 + \frac{\$52.00}{.0065753} \right) \left[(1 + .0065753) \frac{(1 + .0065753)^{24} - 1}{.0065753} \right] \right. \\
 &\quad \left. - \frac{24 * \$52.00}{.0065753} \right] (1 + .0065753)^{-24} \\
 &= [(\$8,196.38)(26.0757271) - \$189,801.23](.8544556) \\
 &= (\$23,925.46)(.8544556) = \$20,443.24
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 Mgg &= \$288.00 \left[\frac{(1 + .0065753)^{24} - (1 + .033)^{24}}{.0065753 - .033} \right] = \$288.00 \left[\frac{1.1703357 - 2.1797551}{-.0264247} \right] \\
 &= \$288.00 \left[\frac{-1.0094194}{-.0264247} \right] = (\$288.00)(38.1998433) = \$11,001.55
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Mgg &= \$288.00(1 + .0065753) \left[\frac{(1 + .0065753)^{24} - (1 + .033)^{24}}{.0065753 - .033} \right] \\
 &= \$289.89 \left[\frac{1.1703357 - 2.1797551}{-.0264247} \right] = \$289.89 \left[\frac{-1.0094194}{-.0264247} \right] \\
 &= (\$289.89)(38.1998433) = \$11,073.89
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 Rp_1 &= \frac{\$11,001.55}{\left[\frac{(1 + .0065753)^{24} - (1 + .033)^{24}}{.0065753 - .033} \right]} = \frac{\$11,001.55}{\left[\frac{1.1703357 - 2.1797551}{-.0264247} \right]} = \frac{\$11,001.55}{\left[\frac{-1.0094194}{-.0264247} \right]} \\
 &= \frac{\$11,001.55}{38.1998433} = \$288.00
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Rp_1 &= \frac{\$11,073.89}{\left[\frac{(1 + .0065753)^{24} - (1 + .033)^{24}}{.0065753 - .033} \right] (1 + .0065753)} \\
 &= \frac{\$11,073.89}{\left[\frac{1.1703357 - 2.1797551}{-.0264247} \right] (1.006573)} = \frac{\$11,073.89}{\left[\frac{-1.0094194}{-.0264247} \right] (1.006573)} \\
 &= \frac{\$11,073.89}{(38.1998433)(1.0065753)} = \frac{\$11,073.89}{38.4510187} = \$288.00
 \end{aligned}$$

3.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$125.00	ga	\$32.00
i	5.7%	gg	1.2%
m	c/15 días	n	36

POSPAGABLE

$$\begin{aligned}
 Mga &= \left(\$125.00 + \frac{\$32.00}{.0023424} \right) \left[\frac{(1 + .0023424)^{36} - 1}{.0023424} \right] - \frac{36 * \$32.00}{.0023424} \\
 &= (\$13,786.20)(37.5156565) - \$491,803.28 \\
 &= \$517,198.43 - \$491,803.28 = \$25,395.15
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Mga &= \left(\$125.00 + \frac{\$32.00}{.0023424} \right) \left[(1 + .0023424) \frac{(1 + .0023424)^{36} - 1}{.0023424} \right] - \frac{36 * \$32.00}{.0023424} \\
 &= (\$13,786.20)(37.6035332) - \$491,803.28 \\
 &= \$518,409.91 - \$491,803.28 = \$26,606.63
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 VAga &= \left[\left(\$125.00 + \frac{\$32.00}{.0023424} \right) \left[\frac{(1 + .0023424)^{36} - 1}{.0023424} \right] \right. \\
 &\quad \left. - \frac{36 * \$32.00}{.0023424} \right] (1 + .0063424)^{-36} \\
 &= [(\$13,786.20)(37.5156565) - \$491,803.28](.7964384) \\
 &= [\$517,198.43 - \$491,803.28](.7964384) = (\$25,395.15)(.7964384) \\
 &= \$20,225.67
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 VAga &= \left[\left(\$125.00 + \frac{\$32.00}{.0023424} \right) \left[(1 + .0023424) \frac{(1 + .0023424)^{36} - 1}{.0023424} \right] \right. \\
 &\quad \left. - \frac{36 * \$32.00}{.0023424} \right] (1 + .0063424)^{-36} \\
 &= [(\$13,786.20)(37.6035332) - \$491,803.28](.7964384) \\
 &= [\$518,409.91 - \$491,803.28](.7964384) = (\$26,606.63)(.7964384) \\
 &= \$21,190.54
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 Mgg &= \$125.00 \left[\frac{(1 + .0023424)^{36} - (1 + .012)^{36}}{.0023424 - .012} \right] = \$125.00 \left[\frac{1.0878766 - 1.5363793}{-.0096576} \right] \\
 &= \$125.00 \left[\frac{-.4485027}{-.0096576} \right] = \$125.00(46.4403889) = \$5,805.05
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Mgg &= \$125.00(1 + .0023424) \left[\frac{(1 + .0023424)^{36} - (1 + .012)^{36}}{.0023424 - .012} \right] \\
 &= \$125.29 \left[\frac{1.0878766 - 1.5363793}{-.0096576} \right] = \$125.29 \left[\frac{-.4485027}{-.0096576} \right] \\
 &= \$125.29(46.4403889) = \$5,818.65
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 Rp_1 &= \frac{\$5,805.05}{\left[\frac{(1 + .0023424)^{36} - (1 + .012)^{36}}{.0023424 - .012} \right]} = \frac{\$5,805.05}{\left[\frac{1.0878766 - 1.5363793}{-.0096576} \right]} = \frac{\$5,805.05}{\left[\frac{-.4485027}{-.0096576} \right]} \\
 &= \frac{\$5,805.05}{46.4403889} = \$125.00
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Rp_1 &= \frac{\$5,818.65}{\left[\frac{(1 + .0023424)^{36} - (1 + .012)^{36}}{.0023424 - .012} \right] (1 + .0023424)} \\
 &= \frac{\$5,818.65}{\left[\frac{1.0878766 - 1.5363793}{-.0096576} \right] (1.0023424)} = \frac{\$5,818.65}{\left[\frac{-.4485027}{-.0096576} \right] (1.0023424)} \\
 &= \frac{\$5,818.65}{(46.4403889)(1.0023424)} = \frac{\$5,818.65}{46.5491708} = \$125.00
 \end{aligned}$$

4.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$1309.00	ga	\$21.00
i	13%	gg	4%
m	c/26 días	n	60

POSPAGABLE

$$\begin{aligned}
 Mga &= \left(\$1309.00 + \frac{\$21.00}{.0092602} \right) \left[\frac{(1 + .0092602)^{60} - 1}{.0092602} \right] - \frac{60 * \$21.00}{.0092602} \\
 &= (\$3,576.77)(79.7560103) - \$136,066.18 = \$285,268.87 - \$136,066.18 \\
 &= \$149,202.70
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}Mga &= \left(\$1309.00 + \frac{\$21.00}{.0092602} \right) \left[(1 + .0092602) \frac{(1 + .0092602)^{60} - 1}{.0092602} \right] - \frac{60 * \$21.00}{.0092602} \\ &= (\$3,576.77)(80.4945669) - \$136,066.18 = \$287,910.52 - \$136,066.18 \\ &= \$151,844.34\end{aligned}$$

POSPAGABLE

$$\begin{aligned}VAga &= \left[\left(\$1309.00 + \frac{\$21.00}{.0092602} \right) \left[\frac{(1 + .0092602)^{60} - 1}{.0092602} \right] \right. \\ &\quad \left. - \frac{60 * \$21.00}{.0092602} \right] (1 + .0092602)^{-60} \\ &= [(\$3,576.77)(79.7560103) - \$136,066.18](.5751897) \\ &= [\$285,268.87 - \$136,066.18](.5751897) = (\$149,202.70)(.5751897) \\ &= \$85,819.85\end{aligned}$$

PREPAGABLE

$$\begin{aligned}VAga &= \left[\left(\$1309.00 + \frac{\$21.00}{.0092602} \right) \left[(1 + .0092602) \frac{(1 + .0092602)^{60} - 1}{.0092602} \right] \right. \\ &\quad \left. - \frac{60 * \$21.00}{.0092602} \right] (1 + .0092602)^{-60} \\ &= [(\$3,576.77)(80.4945669) - \$136,066.18](.5751897) \\ &= [\$287,910.52 - \$136,066.18](.5751897) = (\$151,844.34)(.5751897) \\ &= \$87,339.30\end{aligned}$$

POSPAGABLE

$$\begin{aligned}Mgg &= \$1309.00 \left[\frac{(1 + .0092602)^{60} - (1 + .04)^{60}}{.0092602 - .04} \right] \\ &= \$1309.00 \left[\frac{1.7385566 - 10.5196274}{-.0307398} \right] = \$1309.00 \left[\frac{-8.7810708}{-.0307398} \right] \\ &= \$1309.00(285.6580329) = \$373,926.37\end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 M_{gg} &= \$1309.00(1 + .0092602) \left[\frac{(1 + .0092602)^{60} - (1 + .04)^{60}}{.0092602 - .04} \right] \\
 &= \$1321.12 \left[\frac{1.7385566 - 10.5196274}{-.0307398} \right] = \$1321.12 \left[\frac{-8.7810708}{-.0307398} \right] \\
 &= \$1321.12(285.6580329) = \$377,389.00
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 Rp_1 &= \frac{\$373926.37}{\left[\frac{(1 + .0092602)^{60} - (1 + .04)^{60}}{.0092602 - .04} \right]} = \frac{\$373926.37}{\left[\frac{1.7385566 - 10.5196274}{-.0307398} \right]} = \frac{\$373926.37}{\left[\frac{-8.7810708}{-.0307398} \right]} \\
 &= \frac{\$373926.37}{285.6580329} = \$1309.00
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Rp_1 &= \frac{\$377389.00}{\left[\frac{(1 + .0092602)^{60} - (1 + .04)^{60}}{.0092602 - .04} \right] (1 + .0092602)} \\
 &= \frac{\$377389.00}{\left[\frac{1.7385566 - 10.5196274}{-.0307398} \right] (1.0092602)} = \frac{\$377389.00}{\left[\frac{-8.7810708}{-.0307398} \right] (1.0092602)} \\
 &= \frac{\$377389.00}{(285.6580329)(1.0092602)} = \frac{\$377389.00}{288.3032834} = \$1309.00
 \end{aligned}$$

5.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$706.00	ga	\$18.00
i	4%	gg	2%
m	c/25 días	n	18

POSPAGABLE

$$\begin{aligned}
 M_{ga} &= \left(\$706.00 + \frac{\$18.00}{.0027397} \right) \left[\frac{(1 + .0027397)^{18} - 1}{.0027397} \right] - \frac{18 * \$18.00}{.0027397} \\
 &= (\$7,276.06)(18.4253623) - \$118,261.12 = \$134,064.09 - \$118,261.12 \\
 &= \$15802.96
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}Mga &= \left(\$706.00 + \frac{\$18.00}{.0027397} \right) \left[(1 + .0027397) \frac{(1 + .0027397)^{18} - 1}{.0027397} \right] - \frac{18 * \$18.00}{.0027397} \\ &= (\$7,276.06)(18.4758422) - \$118,261.12 = \$134,431.38 - \$118,261.12 \\ &= \$16,170.26\end{aligned}$$

POSPAGABLE

$$\begin{aligned}VAga &= \left[\left(\$706.00 + \frac{\$18.00}{.0027397} \right) \left[\frac{(1 + .0027397)^{18} - 1}{.0027397} \right] \right. \\ &\quad \left. - \frac{18 * \$18.00}{.0027397} \right] (1 + .0027397)^{-18} \\ &= [(\$7,276.06)(18.4253623) - \$118,261.12](.9519458) \\ &= [\$134,064.09 - \$118,261.12](.9519458) = (\$15,802.96)(.9519458) \\ &= \$15,043.56\end{aligned}$$

PREPAGABLE

$$\begin{aligned}VAga &= \left[\left(\$706.00 + \frac{\$18.00}{.0027397} \right) \left[(1 + .0027397) \frac{(1 + .0027397)^{18} - 1}{.0027397} \right] \right. \\ &\quad \left. - \frac{18 * \$18.00}{.0027397} \right] (1 + .0027397)^{-18} \\ &= [(\$7,276.06)(18.4758422) - \$118,261.12](.9519458) \\ &= [\$134,431.38 - \$118,261.12](.9519458) = (\$16,170.26)(.9519458) \\ &= \$15,393.21\end{aligned}$$

POSPAGABLE

$$\begin{aligned}Mgg &= \$706.00 \left[\frac{(1 + .0027397)^{18} - (1 + .02)^{18}}{.0027397 - .02} \right] = \$706.00 \left[\frac{1.0504799 - 1.4282462}{-.0172603} \right] \\ &= \$706.00 \left[\frac{-.3777663}{-.0172603} \right] = \$706.00(21.8864272) = \$15,451.82\end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Mgg &= \$706.00(1 + .0027397) \left[\frac{(1 + .0027397)^{18} - (1 + .02)^{18}}{.0027397 - .02} \right] \\
 &= \$707.93 \left[\frac{1.0504799 - 1.4282462}{-.0172603} \right] = \$707.93 \left[\frac{-.3777663}{-.0172603} \right] \\
 &= \$707.93(21.8864272) = \$15,494.15
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 Rp_1 &= \frac{\$15,451.82}{\left[\frac{(1 + .0027397)^{18} - (1 + .02)^{18}}{.0027397 - .02} \right]} = \frac{\$15,451.82}{\left[\frac{1.0504799 - 1.4282462}{-.0172603} \right]} = \frac{\$15,451.82}{\left[\frac{-.3777663}{-.0172603} \right]} \\
 &= \frac{\$15,451.82}{21.8864272} = \$706.00
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Rp_1 &= \frac{\$15,494.15}{\left[\frac{(1 + .0027397)^{18} - (1 + .02)^{18}}{.0027397 - .02} \right] (1 + .0027397)} \\
 &= \frac{\$15,494.15}{\left[\frac{1.0504799 - 1.4282462}{-.0172603} \right] (1.0027397)} = \frac{\$15,494.15}{\left[\frac{-.3777663}{-.0172603} \right] (1.0027397)} \\
 &= \frac{\$15,494.15}{(21.8864272)(1.0027397)} = \frac{\$15,494.15}{(21.9463894)} = \$706.00
 \end{aligned}$$

6.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$93.50	ga	\$10.00
i	1.8%	gg	1.2%
m	c/50 días	n	20

POSPAGABLE

$$\begin{aligned}
 Mga &= \left(\$93.5 + \frac{\$10.00}{.0024657} \right) \left[\frac{(1 + .0024657)^{20} - 1}{.0024657} \right] - \frac{20 * \$10.00}{.0024657} \\
 &= (\$4,149.14)(20.4754870) - \$81,112.87 = \$84,955.73 - \$81,112.87 \\
 &= \$3,842.86
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}Mga &= \left(\$93.5 + \frac{\$10.00}{.0024657} \right) \left[(1 + .0024657) \frac{(1 + .0024657)^{20} - 1}{.0024657} \right] - \frac{20 * \$10.00}{.0024657} \\ &= (\$4,149.14)(20.5259734) - \$81,112.87 = \$85,165.21 - \$81,112.87 \\ &= \$4,052.34\end{aligned}$$

POSPAGABLE

$$\begin{aligned}VAga &= \left[\left(\$93.5 + \frac{\$10.00}{.0024657} \right) \left[\frac{(1 + .0024657)^{20} - 1}{.0024657} \right] - \frac{20 * \$10.00}{.0024657} \right] (1 + .0024657)^{-20} \\ &= [(\$4,149.14)(20.4754870) - \$81,112.87](.9519399) \\ &= [\$84,955.73 - \$81,112.87](.9519399) = (\$3,842.86)(.9519399) \\ &= \$3,658.18\end{aligned}$$

PREPAGABLE

$$\begin{aligned}VAga &= \left[\left(\$93.5 + \frac{\$10.00}{.0024657} \right) \left[(1 + .0024657) \frac{(1 + .0024657)^{20} - 1}{.0024657} \right] \right. \\ &\quad \left. - \frac{20 * \$10.00}{.0024657} \right] (1 + .0024657)^{-20} \\ &= [(\$4,149.14)(20.5259734) - \$81,112.87](.9519399) \\ &= [\$85,165.14 - \$81,112.87](.9519399) = (\$4,052.26)(.9519399) \\ &= \$3,857.58\end{aligned}$$

POSPAGABLE

$$\begin{aligned}Mgg &= \$93.5 \left[\frac{(1 + .0024657)^{20} - (1 + .012)^{20}}{.0024657 - .012} \right] = \$93.5 \left[\frac{1.0504864 - 1.2694343}{-.0095343} \right] \\ &= \$93.5 \left[\frac{-.2189479}{-.0095343} \right] = \$93.5(22.9642344) = \$2,147.16\end{aligned}$$

PREPAGABLE

$$\begin{aligned}Mgg &= \$93.5(1 + .0024657) \left[\frac{(1 + .0024657)^{20} - (1 + .012)^{20}}{.0024657 - .012} \right] \\ &= \$93.73 \left[\frac{1.0504864 - 1.2694343}{-.0095343} \right] = \$93.73 \left[\frac{-.2189479}{-.0095343} \right] \\ &= \$93.73(22.9642344) = \$2,152.45\end{aligned}$$

POSPAGABLE

$$Rp_1 = \frac{\$2,147.16}{\left[\frac{(1 + .0024657)^{20} - (1 + .012)^{20}}{.0024657 - .012} \right]} = \frac{\$2,147.16}{\left[\frac{1.0504864 - 1.2694343}{-.0095343} \right]} = \frac{\$2,147.16}{\left[\frac{-.2189479}{-.0095343} \right]}$$

$$= \frac{\$2,147.16}{22.9642344} = \$93.5$$

PREPAGABLE

$$Rp_1 = \frac{\$2,152.45}{\left[\frac{(1 + .0024657)^{20} - (1 + .012)^{20}}{.0024657 - .012} \right] (1 + .0024657)}$$

$$= \frac{\$2,152.45}{\left[\frac{1.0504864 - 1.2694343}{-.0095343} \right] (1.0024657)} = \frac{\$2,152.45}{\left[\frac{-.2189479}{-.0095343} \right] (1.0024657)}$$

$$= \frac{\$2,152.45}{(22.9642344)(1.0024657)} = \frac{\$2,152.45}{23.0208573} = \$93.5$$

7.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$200.00	ga	\$25.00
i	12%	gg	3%
m	c/28 días	n	40

POSPAGABLE

$$Mga = \left(\$200.00 + \frac{\$25.00}{.0092054} \right) \left[\frac{(1 + .0092054)^{40} - 1}{.0092054} \right] - \frac{40 * \$25.00}{.0092054}$$

$$= (\$2,915.80)(48.0937173) - \$108,631.89 = \$140,231.53 - \$108,631.89$$

$$= \$31,599.64$$

PREPAGABLE

$$Mga = \left(\$200.00 + \frac{\$25.00}{.0092054} \right) \left[(1 + .0092054) \frac{(1 + .0092054)^{40} - 1}{.0092054} \right] - \frac{40 * \$25.00}{.0092054}$$

$$= (\$2,915.80)(48.5364392) - \$108,631.89 = \$141,522.42 - \$108,631.89$$

$$= \$32,890.53$$

POSPAGABLE

$$\begin{aligned} VAga &= \left[\left(\$200.00 + \frac{\$25.00}{.0092054} \right) \left[\frac{(1 + .0092054)^{40} - 1}{.0092054} \right] \right. \\ &\quad \left. - \frac{40 * \$25.00}{.0092054} \right] (1 + .0092054)^{-40} \\ &= [(\$2,915.80)(48.0937173) - \$108,631.89](.6931342) \\ &= [\$140,231.53 - \$108,631.89](.6931342) = (\$31,599.64)(.6931342) \\ &= \$21,902.79 \end{aligned}$$

PREPAGABLE

$$\begin{aligned} VAga &= \left[\left(\$200.00 + \frac{\$25.00}{.0092054} \right) \left[1 + .0092054 \right] \frac{(1 + .0092054)^{40} - 1}{.0092054} \right. \\ &\quad \left. - \frac{40 * \$25.00}{.0092054} \right] (1 + .0092054)^{-40} \\ &= [(\$2,915.80)(48.5364392) - \$108,631.89](.6931342) \\ &= [\$141,522.42 - \$108,631.89](.6931342) = (\$32,890.53)(.6931342) \\ &= \$22,797.55 \end{aligned}$$

POSPAGABLE

$$\begin{aligned} Mgg &= \$200.00 \left[\frac{(1 + .0092054)^{40} - (1 + .03)^{40}}{.0092054 - .03} \right] = \$200.00 \left[\frac{1.4427219 - 3.2620377}{-.0207946} \right] \\ &= \$200.00 \left[\frac{-1.8193158}{-.0207946} \right] = \$200.00(87.4898194) = \$17,497.96 \end{aligned}$$

PREPAGABLE

$$\begin{aligned} Mgg &= \$200.00(1 + .0092054) \left[\frac{(1 + .0092054)^{40} - (1 + .03)^{40}}{.0092054 - .03} \right] \\ &= \$201.84 \left[\frac{1.4427219 - 3.2620377}{-.0207946} \right] = \$201.84 \left[\frac{-1.8193158}{-.0207946} \right] \\ &= \$201.84(87.4898194) = \$17,659.04 \end{aligned}$$

POSPAGABLE

$$Rp_1 = \frac{\$17,497.96}{\left[\frac{(1 + .0092054)^{40} - (1 + .03)^{40}}{.0092054 - .03} \right]} = \frac{\$17,497.96}{\left[\frac{1.4427219 - 3.2620377}{-.0207946} \right]} = \frac{\$17,497.96}{\left[\frac{-1.8193158}{-.0207946} \right]}$$

$$= \frac{\$17,497.96}{87.4898194} = \$200.00$$

PREPAGABLE

$$Rp_1 = \frac{\$17,659.04}{\left[\frac{(1 + .0092054)^{40} - (1 + .03)^{40}}{.0092054 - .03} \right] (1 + .0092054)}$$

$$= \frac{\$17,659.04}{\left[\frac{1.4427219 - 3.2620377}{-.0207946} \right] (1.0092054)} = \frac{\$17,659.04}{\left[\frac{-1.8193158}{-.0207946} \right] (1.0092054)}$$

$$= \frac{\$17,659.04}{(87.4898194)(1.0092054)} = \frac{\$17,659.04}{88.2951981} = \$200.00$$

8.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$1500.00	ga	\$22.00
i	5%	gg	1.8%
m	c/15 días	n	72

POSPAGABLE

$$Mga = \left(\$1,500.00 + \frac{\$22.00}{.0020547} \right) \left[\frac{(1 + .0020547)^{72} - 1}{.0020547} \right] - \frac{72 * \$22.00}{.0020547}$$

$$= (\$12,207.16)(77.5127803) - \$770,915.46$$

$$= \$946,210.85 - \$770,915.46 = \$175,295.39$$

PREPAGABLE

$$Mga = \left(\$1,500.00 + \frac{\$22.00}{.0020547} \right) \left[(1 + .0020547) \frac{(1 + .0020547)^{72} - 1}{.0020547} \right] - \frac{72 * \$22.00}{.0020547}$$

$$= (\$12,207.16)(77.6720458) - \$770,915.46$$

$$= \$948,155.03 - \$770,915.46 = \$177,239.57$$

POSPAGABLE

$$\begin{aligned}
VAga &= \left[\left(\$1,500.00 + \frac{\$22.00}{.0020547} \right) \left[\frac{(1 + .0020547)^{72} - 1}{.0020547} \right] \right. \\
&\quad \left. - \frac{72 * \$22.00}{.0020547} \right] (1 + .0020547)^{-72} \\
&= [(\$12,207.16)(77.5127803) - \$770,915.46](.8626151) \\
&= [\$946,210.85 - \$770,915.46](.8626151) = (\$175,295.39)(.8626151) \\
&= \$151,212.45
\end{aligned}$$

PREPAGABLE

$$\begin{aligned}
VAga &= \left[\left(\$1,500.00 + \frac{\$22.00}{.0020547} \right) \left[(1 + .0020547) \frac{(1 + .0020547)^{72} - 1}{.0020547} \right] \right. \\
&\quad \left. - \frac{72 * \$22.00}{.0020547} \right] (1 + .0020547)^{-72} \\
&= [(\$12,207.16)(77.6720458) - \$770,915.46](.8626151) \\
&= [\$948,155.03 - \$770,915.46](.8626151) = [\$177,239.57](.8626151) \\
&= \$152,889.53
\end{aligned}$$

POSPAGABLE

$$\begin{aligned}
Mgg &= \$1,500.00 \left[\frac{(1 + .0020547)^{72} - (1 + .018)^{72}}{.0020547 - .018} \right] \\
&= \$1,500.00 \left[\frac{1.1592655 - 3.6127675}{.0020547 - .018} \right] = \$1,500.00 \left[\frac{-2.453502}{-0.0159453} \right] \\
&= \$1,500.00(153.8699178) = \$230,804.88
\end{aligned}$$

PREPAGABLE

$$\begin{aligned}
Mgg &= \$1,500.00(1 + .0020547) \left[\frac{(1 + .0020547)^{72} - (1 + .018)^{72}}{.0020547 - .018} \right] \\
&= (\$1,503.08) \left[\frac{1.1592655 - 3.6127675}{.0020547 - .018} \right] = (\$1,503.08) \left[\frac{-2.453502}{-0.0159453} \right] \\
&= (\$1,503.08)(\$153.87) = \$231,279.11
\end{aligned}$$

POSPAGABLE

$$Rp_1 = \frac{\$230,804.88}{\left[\frac{(1 + .0020547)^{72} - (1 + .018)^{72}}{.0020547 - .018} \right]} = \frac{\$230,804.88}{\left[\frac{1.1592655 - 3.6127675}{.0020547 - .018} \right]} = \frac{\$230,804.88}{\left[\frac{-2.453502}{-0.0159453} \right]}$$

$$= \frac{\$230,804.88}{153.8699178} = \$1,500.00$$

PREPAGABLE

$$Rp_1 = \frac{\$231,279.11}{\left[\frac{(1 + .0020547)^{72} - (1 + .018)^{72}}{.0020547 - .018} \right] (1 + .0020547)}$$

$$= \frac{\$231,279.11}{\left[\frac{1.1592655 - 3.6127675}{.0020547 - .018} \right] (1.0020547)} = \frac{\$231,279.11}{\left[\frac{-2.453502}{-0.0159453} \right] (1.0020547)}$$

$$= \frac{\$231,279.11}{(153.8699178)(1.0020547)} = \frac{\$231,279.11}{154.1860738} = \$1,500.00$$

9.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	600	ga	25
i	10.5	gg	2.4%
m	c/20 días	n	88

POSPAGABLE

$$Mga = \left(\$600.00 + \frac{\$25.00}{.0057534} \right) \left[\frac{(1 + .0057534)^{88} - 1}{.0057534} \right] - \frac{88 * \$25.00}{.0057534}$$

$$= (4945.256718)(114.147141) - 382382.5912$$

$$= 564486.9159 - 382382.5912 = 182104.3247$$

PREPAGABLE

$$Mga = \left(\$600.00 + \frac{\$25.00}{.0057534} \right) \left[(1 + .0057534) \frac{(1 + .0057534)^{88} - 1}{.0057534} \right] - \frac{88 * \$25.00}{.0057534}$$

$$= (\$4,945.26)(114.8038752) - \$382,382.59$$

$$= \$567,734.63 - \$382,382.59 = \$185,352.04$$

POSPAGABLE

$$\begin{aligned} VAga &= \left[\left(\$600.00 + \frac{\$25.00}{.0057534} \right) \left[\frac{(1 + .0057534)^{88} - 1}{.0057534} \right] \right. \\ &\quad \left. - \frac{88 * \$25.00}{.0057534} \right] (1 + .0057534)^{-88} \\ &= [(\$4,945.26)(114.147141) - \$382,382.59](.6035971) \\ &= [\$564,486.92 - \$382,382.59](.6035971) = (\$182,104.32)(.6035971) \\ &= \$109,917.64 \end{aligned}$$

PREPAGABLE

$$\begin{aligned} VAga &= \left[\left(\$600.00 + \frac{\$25.00}{.0057534} \right) \left[(1 + .0057534) \frac{(1 + .0057534)^{88} - 1}{.0057534} \right] \right. \\ &\quad \left. - \frac{88 * \$25.00}{.0057534} \right] (1 + .0057534)^{-88} \\ &= [(\$4,945.26)(114.8038752) - \$382,382.59](.6035971) \\ &= [\$567,734.63 - \$382,382.59](.603597139) = \\ &= [\$185,352.04](.6035971) = \$111,877.96 \end{aligned}$$

POSPAGABLE

$$\begin{aligned} Mgg &= \$600.00 \left[\frac{(1 + .0057534)^{88} - (1 + .024)^{88}}{.0057534 - .024} \right] = \$600.00 \left[\frac{1.6567342 - 8.0611348}{.0057534 - .024} \right] \\ &= \$600.00 \left[\frac{-6.4044006}{-.0182466} \right] = \$600.00(350.9914505) = \$210,594.87 \end{aligned}$$

PREPAGABLE

$$\begin{aligned} Mgg &= \$600.00(1 + .0057534) \left[\frac{(1 + .0057534)^{88} - (1 + .024)^{88}}{.0057534 - .024} \right] \\ &= \$600.00(1.0057534) \left[\frac{1.6567342 - 8.0611348}{.0057534 - .024} \right] \\ &= (\$603.45) \left[\frac{-6.4044006}{-.0182466} \right] = (603.45204)(350.9914505) = \$211,806.51 \end{aligned}$$

POSPAGABLE

$$Rp_1 = \frac{\$210,594.87}{\left[\frac{(1 + .0057534)^{88} - (1 + .024)^{88}}{.0057534 - .024} \right]} = \frac{\$210,594.87}{\left[\frac{1.6567342 - 8.0611348}{.0057534 - .024} \right]} = \frac{\$210,594.87}{\left[\frac{-6.4044006}{-.0182466} \right]}$$

$$= \frac{\$210,594.87}{350.9914505} = \$600.00$$

PREPAGABLE

$$Rp_1 = \frac{\$211,806.51}{\left[\frac{(1 + .0057534)^{88} - (1 + .024)^{88}}{.0057534 - .024} \right] (1 + .0057534)}$$

$$= \frac{\$211,806.51}{\left[\frac{1.6567342 - 8.0611348}{.0057534 - .024} \right] (1.0057534)} = \frac{\$211,806.51}{\left[\frac{-6.4044006}{-.0182466} \right] (1.0057534)}$$

$$= \frac{\$211,806.51}{(350.9914505)(1.0057534)} = \frac{\$211,806.51}{353.0108447} = \$600.00$$

10.-CON LOS SIGUIENTES DATOS, RESOLVER:

DATOS			
Rp ₁	\$800.00	ga	\$20.00
i	10.6%	gg	2.3%
m	c/28 días	n	78

POSPAGABLE

$$Mga = \left(\$800.00 + \frac{\$20.00}{.0081315} \right) \left[\frac{(1 + .0081315)^{78} - 1}{.0081315} \right] - \frac{78 * \$20.00}{.0081315}$$

$$= (\$3,259.57)(108.3183293) - \$191,846.52$$

$$= \$353,071.26 - \$191,846.52 = \$161,224.74$$

PREPAGABLE

$$Mga = \left(\$800.00 + \frac{\$20.00}{.0081315} \right) \left[(1 + .0081315) \frac{(1 + .0081315)^{78} - 1}{.0081315} \right] - \frac{78 * \$20.00}{.0081315}$$

$$= (\$3,259.57)(109.1991198) - \$191,846.52$$

$$= \$355,942.26 - \$191,846.52 = \$164,095.74$$

POSPAGABLE

$$\begin{aligned}
 VAga &= \left[\left(\$800.00 + \frac{\$20.00}{.0081315} \right) \left[\frac{(1 + .0081315)^{78} - 1}{.0081315} \right] \right. \\
 &\quad \left. - \frac{78 * \$20.00}{.0081315} \right] (1 + .0081315)^{-78} \\
 &= [(\$3,259.57)(108.3183293) - \$191,846.52](.5316913) \\
 &= [\$353,071.26 - \$191,846.52](.5316913) = (\$161,224.74)(.5316913) \\
 &= \$85,721.79
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 VAga &= \left[\left(\$800.00 + \frac{\$20.00}{.0081315} \right) \left[(1 + .0081315) \frac{(1 + .0081315)^{78} - 1}{.0081315} \right] \right. \\
 &\quad \left. - \frac{78 * \$20.00}{.0081315} \right] (1 + .0081315)^{-78} \\
 &= [(\$3,259.57)(109.1991198) - \$191,846.52](.5316913) \\
 &= [\$355,942.26 - \$191,846.52](.5316913) = (\$164,095.74)(.5316913) \\
 &= \$87,248.27
 \end{aligned}$$

POSPAGABLE

$$\begin{aligned}
 Mgg &= \$800.00 \left[\frac{(1 + .0081315)^{78} - (1 + .023)^{78}}{.0081315 - .023} \right] = \$800.00 \left[\frac{1.8807904 - 5.8924978}{.0081315 - .023} \right] \\
 &= \$800.00 \left[\frac{-4.0117074}{-.0148685} \right] = \$800.00(269.8125164) = \$215,850.01
 \end{aligned}$$

PREPAGABLE

$$\begin{aligned}
 Mgg &= \$800.00(1 + .0081315) \left[\frac{(1 + .0081315)^{78} - (1 + .023)^{78}}{.0081315 - .023} \right] \\
 &= (\$806.51) \left[\frac{1.8807904 - 5.8924978}{.0081315 - .023} \right] = (\$806.51) \left[\frac{-4.0117074}{-.0148685} \right] \\
 &= (\$806.51)(269.8125164) = \$217,605.20
 \end{aligned}$$

POSPAGABLE

$$Rp_1 = \frac{\$215,850.01}{\left[\frac{(1 + .0081315)^{78} - (1 + .023)^{78}}{.0081315 - .023} \right]} = \frac{\$215,850.01}{\left[\frac{1.8807904 - 5.8924978}{.0081315 - .023} \right]} = \frac{\$215,850.01}{\left[\frac{-4.0117074}{-.0148685} \right]}$$

$$= \frac{\$215,850.01}{269.8125164} = \$800.00$$

PREPAGABLE

$$Rp_1 = \frac{\$217,605.20}{\left[\frac{(1 + .0081315)^{78} - (1 + .023)^{78}}{.0081315 - .023} \right] (1 + .0081315)}$$

$$= \frac{\$217,605.20}{\left[\frac{1.8807904 - 5.8924978}{.0081315 - .023} \right] (1.0081315)} = \frac{\$217,605.20}{\left[\frac{-4.0117074}{-.0148685} \right] (1.0081315)}$$

$$= \frac{\$217,605.20}{(269.8125164)(1.0081315)} = \frac{\$217,605.20}{272.0064969} = \$800.00$$