

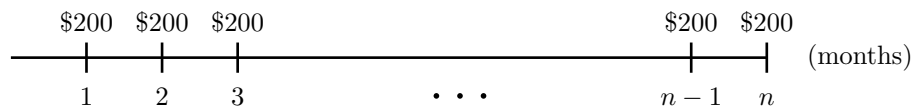
# Credit Debt Amortization

February 2025

The average credit card rate in Canada is between 19.99% and 25.99%, so I will use 22.99% for simplicity. Note that these rates are nominally compounded monthly, so we need to use the monthly interest rate, so we divide by 12:

Monthly rate =  $\frac{22.99}{12} = 1.92\%$  to two decimal places.

Suppose you made a purchase of \$5000 and don't have cash to immediately pay it all back, so you'll pay it back using \$200 per month, a minimum payment to keep your account in good standing. We can set up an amortization schedule with monthly payments of \$200 and we want to know how long it would take to pay off this debt in months if we make the first payment after the first month.



The interest would be the monthly rate multiplied by the balance at month  $t$ , so the new balance including interest is given by:  $NewBalance = 1.0192 * Previous$ . We can use an amortization table to view this (for simplicity, all figures are rounded to the nearest dollar).

## 0.1 Amortization Schedule

Balance at end of month t in CAD	Interest Accrued	Principal Repaid	Time (in months)
5000	0	0	0
4896	96	104	1
4790	94	106	2
4682	92	108	3
4572	90	110	4
4460	88	112	5
4346	86	114	6
4229	83	117	7
4110	81	119	8
3989	79	121	9
3866	77	123	10
3740	74	126	11
3612	72	128	12
3481	69	131	13
3348	67	133	14
3212	64	136	15
3074	62	138	16
2933	59	141	17
2789	56	144	18
2642	53	147	19
2493	51	149	20
2341	48	152	21
2186	45	155	22
2028	42	158	23
1867	39	161	24
1703	36	164	25
1536	33	167	26
1365	29	171	27
1191	26	174	28
1014	23	177	29
833	19	181	30
649	16	184	31
461	12	188	32
270	9	191	33
75	5	195	34
0	1	76	35