

(* Calculate the annual payment for the market interest rate *)

$r = .0477$

$T = 25$

$(1 / r) - (1 / (r * ((1 + r) ^ T)))$

$Out_t^* = 0.0477$

$Out_t^* = 25$

$Out_t^* = 14.4246576$

$ln_t^* = 800\,000 / \%$

$Out_t^* = 55\,460.5885$

(* Calculate the annual payment for the concession rate *)

$r = .0369$

$Out_t^* = 0.0369$

$ln_t^* = T = 25$

$(1 / r) - (1 / (r * ((1 + r) ^ T)))$

$Out_t^* = 25$

$Out_t^* = 16.1467998$

$ln_t^* = 800\,000 / \%$

$Out_t^* = 49\,545.4215$

(* Calculate the payment savings over the 5 year term *)

$r = .0477$

$Out_t^* = 0.0477$

$ln_t^* = T = 5$

$(1 / r) - (1 / (r * ((1 + r) ^ T)))$

$Out_t^* = 5$

$Out_t^* = 4.35714202$

$ln_t^* = \% * (55\,460.59 - 49\,545.42)$

$Out_t^* = 25\,773.2358$

(* Calculate the savings from principal reduction *)

$r = .0477$

$T = 20$

$(1 / r) - (1 / (r * ((1 + r) ^ T)))$

$Out_t^* = 0.0477$

$Out_t^* = 20$

$Out_t^* = 12.7088727$

In[⁶]:= % (55 460.59)

Out[⁶]= 704 841.58

In[⁶]:= r = .0369

T = 20

(1 / r) - (1 / (r * ((1 + r) ^ T)))

Out[⁶]= 0.0369

Out[⁶]= 20

Out[⁶]= 13.9711351

In[⁶]:= % * 49 545.42

Out[⁶]= 692 205.756

In[⁶]:= (704 841.58 - %) / ((1.0477) ^ 5)

Out[⁶]= 10 009.6492

(* Calculate the total savings *)

In[⁶]:= % + 25 773.24

Out[⁶]= 35 782.8892