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FORMULA SHEET

CFA® Program Level I

Derivatives Formula Sheet

2027 curriculum · 10 readings · 41 formulas

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Version v2027.3 · October 2026

ABOUT THIS EDITION

CredGuild · CFA® Program Level I · Derivatives Formula Sheet
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USING THIS BOOK

This sheet is a revision aid. Use it alongside the notes and the CFA Institute curriculum. The latest version is free at credguild.com.

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Every formula in the CredGuild notes for the 2027 CFA® Program Level I curriculum, Derivatives, reading by reading, each with what it is for. Worked numbers are left out. Use it for a last check of the equations; the notes explain where each one comes from.

To learn a reading in full, open its notes at credguild.com. This sheet is free to print and share: credguild.com/cfa/level-1/formula-sheet/

CFA® PROGRAM LEVEL I · FORMULA SHEET

Derivatives

Exam weight 6–9% · 10 readings · 41 formulas

70 Derivative Instrument and Derivative Market Features

Long and short exposure

$$\text{Payoff to long at settlement} = S_T - F$$

$$\text{Payoff to short} = F - S_T$$

71 Forward Commitment and Contingent Claim Features and Instruments

Value at expiration and profit for long and short option positions

$$c_T = \max(0,\ S_T - X)$$

$$p_T = \max(0,\ X - S_T)$$

$$\text{Profit to buyer} = \text{value at expiration} - \text{premium paid}$$

$$\text{Profit to writer} = \text{premium received} - \text{value at expiration}$$

72 Derivative Benefits, Risks, and Issuer and Investor Uses

Risks

$$\%\Delta\text{margin} = \frac{\Delta P\%}{m}$$

$$\text{leverage} = \frac{1}{m}$$

73 Arbitrage, Replication, and the Cost of Carry in Pricing Derivatives

Replicating forwards (underlying with no costs or benefits of holding)

$$F_0(T) = S_0(1 + R_f)^T$$

Spot versus expected future price, and the cost of carry

$$F_0(T) = [S_0 + PV_0(\text{cost}) - PV_0(\text{benefit})]\,(1 + R_f)^T$$

$$F_0(T) = S_0\, e^{rT}$$

$$F_0(T) = S_0\, e^{(r+c)T}$$

$$F_0(T) = S_0\, e^{(r+c-b)T}$$

Currency forwards

$$F = S_0 \times \left(\frac{1 + R_{\text{price}}}{1 + R_{\text{base}}}\right)^T$$

$$\text{or, continuously compounded,} \quad F = S_0\, e^{(r_{\text{price}} - r_{\text{base}})T}$$

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74 Pricing and Valuation of Forward Contracts and for an Underlying With Varying Maturities

Value and price of a forward: at initiation, during its life, at expiration	$V_t(T) = [S_t + PV_t(\text{cost}) - PV_t(\text{benefit})] - F_0(T)(1+R_f)^{-(T-t)}$
Implied (no-arbitrage) forward rates	$(1+Z_{A+B})^{A+B} = (1+Z_A)^A (1+F_{A,B})^B \quad \text{so} \quad F_{A,B} = \left[\frac{(1+Z_{A+B})^{A+B}}{(1+Z_A)^A}\right]^{1/B} - 1$ $1 + Z_{\text{long}}\frac{d_{\text{long}}}{360} = \left(1 + Z_{\text{short}}\frac{d_{\text{short}}}{360}\right)\left(1 + F\frac{d_{\text{long}}-d_{\text{short}}}{360}\right)$
Forward rate agreements (FRAs)	$\text{Payment to long} = \frac{\text{Notional} \times (\text{MRR} - \text{FRA rate}) \times \frac{\text{days}}{360}}{1 + \text{MRR} \times \frac{\text{days}}{360}}$

75 Pricing and Valuation of Futures Contracts

Interest rate futures	$\text{futures price} = 100 - (100 \times \text{MRR}_{A,\,B-A})$ $\text{BPV} = \text{notional principal} \times \text{period (in years)} \times 0.0001$

76 Pricing and Valuation of Interest Rates and Other Swaps

Solving for the par swap rate	$\sum_{n=1}^{N} \frac{\text{MRR}_n}{(1+S_n)^n} = \sum_{n=1}^{N} \frac{F}{(1+S_n)^n}$ $F = \frac{1 - \frac{1}{(1+S_N)^N}}{\sum_{n=1}^{N} \frac{1}{(1+S_n)^n}}$
Value during the life	$\text{Value to fixed-rate payer} = PV(\text{expected floating payments}) - PV(\text{remaining fixed payments})$

77 Pricing and Valuation of Options

Moneyness, exercise value and time value	$\text{Call exercise value} = \max(0,\ S - X)$ $\text{Put exercise value} = \max(0,\ X - S)$ $\text{Option premium} = \text{exercise value} + \text{time value}, \quad \text{so} \quad \text{time value} = \text{premium} - \text{exercise value}$

78 Option Replication Using Put-Call Parity

Put–call parity	$c + X(1+R_f)^{-T} = S + p$
Put–call forward parity and options in corporate finance	$F_0(T)(1+R_f)^{-T} + p_0 = c_0 + X(1+R_f)^{-T}$ $p_0 - c_0 = [X - F_0(T)](1+R_f)^{-T}$

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Option view of a firm (equity and debt)	$V_0 = c_0 + PV(D) - p_0$ $\text{Equity}_T = \max(0,\ V_T - D)$ $\text{Debt}_T = \min(V_T,\ D) = D - \max(0,\ D - V_T)$

79 Valuing a Derivative Using a One-Period Binomial Model

Call: long h shares, short one call	$h\,S_1^u - c_1^u = h\,S_1^d - c_1^d \quad \Rightarrow \quad h = \dfrac{c_1^u - c_1^d}{S_1^u - S_1^d}$ $c_0 = hS_0 - V_0$
Put: long h shares, long one put	$h = \dfrac{p_1^d - p_1^u}{S_1^u - S_1^d}$ $V_0 = hS_0 + p_0 \ \Rightarrow\ p_0 = V_0 - hS_0$
Risk neutrality	$\pi_U = \dfrac{1 + R_f - R^d}{R^u - R^d}$ $\pi_D = 1 - \pi_U$ $c_0 = \dfrac{\pi_U\,c_1^u + \pi_D\,c_1^d}{1 + R_f}$ $p_0 = \dfrac{\pi_U\,p_1^u + \pi_D\,p_1^d}{1 + R_f}$

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- **Diagnostic test:** 36 questions weighted like the exam, a score in each topic and the topics to start with. credguild.com/cfa/level-1/diagnostic/
- **Practice questions:** 398 free questions with full explanations, scored as you answer. A free account answers any question in the bank, up to 50 new questions a day. credguild.com/cfa/level-1/practice/
- **Notes:** every reading of the 2027 curriculum, with worked examples and exam traps, on the site and as a PDF. credguild.com/cfa/level-1/notes/
- **Study plan:** pick your exam window and weekly hours and get a week-by-week schedule. credguild.com/cfa/level-1/plan/
- **Mock exam:** 180 questions in two sessions, on the 2027 topic weights; the first one is free with an account. credguild.com/cfa/level-1/mock/
- **Cheat sheet and formula sheet:** every reading's bottom line and every formula, by topic. credguild.com/cfa/level-1/cheat-sheet/

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