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CIRE Derivatives Payoffs

Every option strategy, futures pricing, and Greeks sign you need for CIRE Element 8.

Single-leg options (max gain / max loss)

Long call
`max(S - K, 0) - prem`
Max loss = premium; max gain unlimited

Short call
`prem - max(S - K, 0)`
Max gain = premium; max loss unlimited (uncovered)

Long put
`max(K - S, 0) - prem`
Max loss = premium; max gain = K - prem

Short put
`prem - max(K - S, 0)`
Max gain = premium; max loss = K - prem

Combined strategies

Covered call
`Long stock + short call`
Income; caps upside at strike

Protective put
`Long stock + long put`
Insurance; max loss = (S - K) + prem

Bull call spread
`Long call (low K) + short call (high K)`
Defined risk + reward

Bear put spread
`Long put (high K) + short put (low K)`
Defined risk + reward

Long straddle
`Long call + long put (same K)`
Profits from large move either way

Long strangle
`Long call (high K) + long put (low K)`
Cheaper than straddle, needs bigger move

Pricing relationships

Put-call parity
`C - P = S - PV(K)`
European, no dividends

Cost of carry (futures)
`F = S × e^((r - q)t)`
q = dividend yield or storage minus convenience

Greeks signs

- Delta: long call +, long put -, short call -, short put +
- Gamma: long options +, short options -
- Vega: long options +, short options -
- Theta: long options usually -, short options usually +

Read the live cheat sheet

Diagrams, worked examples, and rule citations.

https://ciroexam.ca/cheat-sheets/cire-derivatives-payoffs