



FORMULAS YOU MUST KNOW

$$y = mx + c, \quad y - y_1 = m(x - x_1), \quad ax + by + d = 0$$

Forms:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Formula:

$$\frac{P(x)}{dx + e} = \text{quotient} + \frac{R}{dx + e}.$$

$$y = f(x - a)$$

$$y = f(qx)$$

$$y = f(-x)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Gradient:

$$\Delta = b^2 - 4ac$$

Discriminant:

$$y = f(x) + b$$

$$y = pf(x)$$

$$y = -f(x)$$

$$x$$

EXAM TRAPS TO AVOID

- $\ln(a + b) \neq \ln a + \ln b$. There is NO sum rule for logs of sums. Do not invent one under exam pressure.
- $f(x - a)$ shifts right (not left). $f(qx)$ stretches by $\frac{1}{q}$, not q . These two facts cause more lost marks than any other in IB transformations.
- NEVER multiply both sides by a variable whose sign is unknown — the inequality might flip. Safe alternative: multiply by $(x - a)^2 > 0$ (always positive, never flips).
- $|f(x)|$ and $f(|x|)$ are different transforms. Don't confuse them.

Cross-reference the **IB Math AA formula booklet** — anything not in it must be memorised.

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