10 Raj is investigating how the price, P pounds, of a brilliant-cut diamond ring is related to the weight, C carats, of the diamond.

He believes that they are connected by a formula

$$P = aC^n$$

where a and n are constants.

10 (a) Express $\ln P$ in terms of $\ln C$.

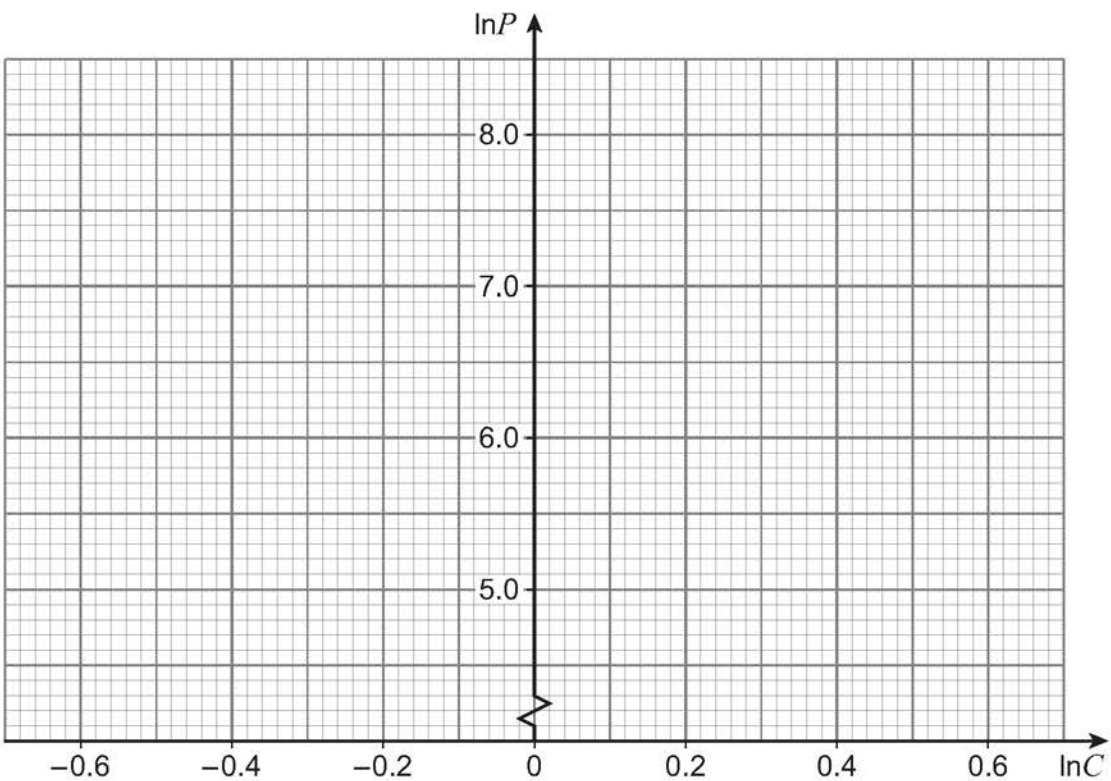
[2 marks]

10 (b) Raj researches the price of three brilliant-cut diamond rings on a website with the following results.

C	0.60	1.15	1.50
P	495	1200	1720

10 (b) (i) Plot $\ln P$ against $\ln C$ for the three rings on the grid below.

[2 marks]



10 (b) (ii) Explain which feature of the plot suggests that Raj's belief may be correct.

[1 mark]

10 (b) (iii) Using the graph on page 15, estimate the value of a and the value of n.

[4 marks]

10 (c) Explain the significance of a in this context.

[1 mark]

10 (d) Raj wants to buy a ring with a brilliant-cut diamond of weight 2 carats.

Estimate the price of such a ring.

[2 marks]