Sample solutions to the 2019 VCAA papers

Specialist Mathematics Examination 1

Question 2 (3 marks)

Find all values of x for which $|x-4| = \frac{x}{2} + 7$.

$$x - 4 = \begin{cases} \frac{x}{2} + 7, & x \geq 4 \\ -\frac{x}{2} - 7, & x < 4 \end{cases}$$

$\frac{x}{2} = 11$ or $\frac{3x}{2} = -3$

$x = 22$ or $x = -2$

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Mathematical Methods Examination 2

Question 14

The weights of packets of lollies are normally distributed with a mean of 200 g.

If 97% of these packets of lollies have a weight of more than 190 g, then the standard deviation of the distribution, correct to one decimal place, is

A.   3.3 g
B.   5.3 g
C.   6.1 g
D.   9.4 g
E.   12.1 g

$Pr(X > 190) = 0.97$

$Pr\left(Z < \frac{190-200}{\sigma}\right) = 0.03$

$\frac{190-200}{\sigma} = -1.88$ $\sigma = 5.3$

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Further Mathematics Examination 2

Question 9 (4 marks)

Phil would like to purchase a block of land.

He will borrow $350 000 to make this purchase.

Interest on this loan will be charged at the rate of 4.9% per annum, compounding fortnightly.

After three years of equal fortnightly repayments, the balance of Phil's loan will be $262 332.33

a. What is the value of each fortnightly repayment Phil will make?
Round your answer to the nearest cent.   1 mark

$\$1704.03$

$N: \ 3 \times 26$

$I: \ 4.9$

$PV: \ 350\,000$

$Pmt: \boxed{-1704.03003}$

$FV: \ -262\,332.33$

$PpY: \ 26$

$CpY: \ 26$

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