Sample solutions to the 2025 VCAA papers
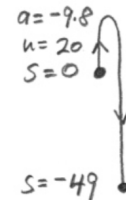
Specialist Mathematics Examination 2

Question 13

From an open window, a person projects a ball vertically up using an outstretched arm so the ball does not strike any part of the building. The point of projection of the ball is 50 m above the ground and its velocity of projection is 20 m s^{-1}.

The time, in seconds, it takes for the ball to reach the tray of a truck that is 1 m above the ground directly below the point of projection is closest to

A. 1.72

B. 5.80

C. 5.83

D. 1.75

$-49 = 20t - 4.9t^2$

$t = 5.80$ as $t > 0$

(solving on CAS)

$a = -9.8$
$u = 20$
$s = 0$

$s = -49$

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Mathematical Methods Examination 2

Question 2

All asymptotes of the graph of $y = 2\tan\left(\pi\left(x + \dfrac{1}{2}\right)\right)$ are given by

A. $x = k,\ k \in Z$

B. $x = 2k,\ k \in Z$

C. $x = 2k+1,\ k \in Z$

D. $x = \dfrac{4k+1}{2},\ k \in Z$

(CAS): solve $\left(\cos\left(\pi \cdot \left(x + \dfrac{1}{2}\right)\right) = 0,\ x\right)$

$x = n1$

A

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General Mathematics Examination 1

Question 16

The seasonal index for the number of meat pie sales in winter is 1.75

To correct for seasonality, the actual number of meat pie sales for winter should be reduced, to the nearest whole percentage, by

A. 25%

B. 43%

C. 57%

D. 75%

deseasonalised figure $= \dfrac{1}{1.75} \times$ actual figure

$= 0.5714... \times$ actual figure

∴ reduce by 43%

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Sample solutions to the 2025 VCAA papers

Question 19

A credit card charges simple interest of 20.99% per annum for overdue account balances.

An account holder's balance at the end of a given statement period is $2750.

The balance attracts 23 days of simple interest after the end of the statement period before the account is settled.

The total balance and interest amount, to the nearest cent, that is fully repaid after the 23 days is

A. $36.37
B. $2786.37
C. $13 276.18
D. $16 026.18

$$2750 + 2750 \times 0.2099 \times \frac{23}{365}$$

$$= \$2786.37$$

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