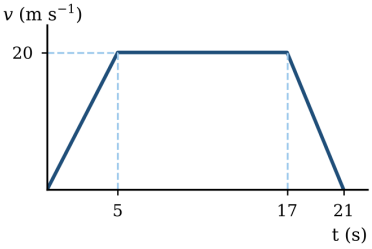
Day 303 **A Level Maths: C Tier 10-a-day**

1 Rationalise the denominator of $\frac{2}{3-\sqrt{3}}$.
Write your answer in the form $p + q\sqrt{3}$.

2 $X \sim N(40, 10^2)$. Find $P(45 < X < 60)$, giving your answer to 3 s.f.

3 Find the gradient of the curve $y = (x^2 + 2)^2$ at the point where $x = 1$.

4 The graph shows the velocity of a car over 21 seconds as it moves in a straight line.
(a) Find its acceleration in the first 5 s.
(b) Find the total distance travelled.



5 Solve $3 \sin x = 1$ for $0 \leq x \leq 2\pi$.
Give your answers to 3 significant figures.

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6 A ball of weight 75 N hangs from a light string, pulled aside by a horizontal force P N so that the string makes an angle θ with the vertical, where $\tan\theta = \frac{8}{15}$. Find P and the tension T N.

7 Find the set of values of x satisfying both $3x + 4 > 1$ and $x^2 + 2x - 8 < 0$.

8 X ~ B(150, 0.6). Use a normal approximation to find $P(X \leq 84)$, to 3 s.f.

9 Solve $2\cos^2 x + 3\cos x + 1 = 0$ for $0° \leq x \leq 360°$.

10 The diagram shows the graph of $y = \frac{k}{x - a} + c$ with its asymptotes. Find the values of a, c and k.

