1 Expand $(2x + 5)(x - 1)(x + 3)$, simplifying your answer. **[3]**

2 Find the discriminant of $3x^2 + 5x + 2$. Hence state the number of distinct real roots of the equation $3x^2 + 5x + 2 = 0$. **[3]**

3 Make x the subject of the formula $y = \dfrac{1 - 2x}{x + 3}$. **[4]**

4 Factorise $n^3 + 3n^2 + 2n$. Hence prove that, when n is a positive integer, $n^3 + 3n^2 + 2n$ is always divisible by 6. **[3]**

5 Express $5x^2 + 20x + 6$ in the form $a(x + b)^2 + c$. **[4]**

6 Rearrange the formula $c = \sqrt{\dfrac{a + b}{2}}$ to make a the subject. **[3]**

7 Make a the subject of the formula $s = ut + \frac{1}{2}at^2$. **[3]**

8 Prove that, when n is an integer, $n^3 - n$ is always even. **[3]**

9 **(i)** Express $x^2 + 6x + 5$ in the form $(x + a)^2 + b$. **[3]**

(ii) Write down the coordinates of the minimum point on the graph of $y = x^2 + 6x + 5$. **[2]**

10 Find the real roots of the equation $x^4 - 5x^2 - 36 = 0$ by considering it as a quadratic equation in x^2. **[4]**

11 Solve the equation $\dfrac{3x + 1}{2x} = 4$. **[3]**

12 Find the range of values of k for which the equation $2x^2 + kx + 18 = 0$ does not have real roots. **[4]**

13 Rearrange $y + 5 = x(y + 2)$ to make y the subject of the formula. **[4]**