

## 4th Revision 1

1. A sequence is defined  $u_{n+1} = \frac{1}{u_n} + 1$  and  $u_1 = 3$ . Find  $u_2, u_3, u_4$ .  $\frac{4}{3}, \frac{7}{4}, \frac{11}{7}$
2. Find the equation of the line that passes through  $(3, 1)$  and  $(5, -3)$  in the form  $y = mx + c$ .  $y = -2x + 7$
3. A triangle  $PQR$  has lengths  $PQ = PR = 6.1$  and  $QR = 4.2$ . Find  $\hat{PQR}$ .  $69.86^\circ$
4. Factorise
- (a)  $3x^2 + 9x$ .  $3x(x + 3)$
- (b)  $3x^2 - 3x - 6$ .  $3(x - 2)(x + 1)$
- (c)  $27x^2 - 12$ .  $3(3x - 2)(3x + 2)$
5. Find the equation of the line that passes through  $(-1, 2)$  and  $(1, 1)$  in the form  $ax + by + c = 0$ .  $x + 2y - 3 = 0$
6. Solve
- (a)  $\frac{4}{x+1} = 5$ .  $x = -\frac{1}{5}$
- (b)  $\frac{2+x}{2} - \frac{x-5}{3} = 2x + 1$ .  $x = \frac{10}{11}$
- (c)  $x^2 = 9$ .  $x = 3$  or  $x = -3$
- (d)  $x^2 = 9x$ .  $x = 9$  or  $x = 0$
- (e)  $x^2 = 9x - 8$ .  $x = 8$  or  $x = 1$
- (f)  $10x^2 + 20x = 30$ .  $x = -3$  or  $x = 1$
7. Find the 500th term of the sequence  $8, 13, 18, 23, 28, \dots$ .  $2503$
8. Find the gradient of the line perpendicular to the line  $3x + 7y = 8$ .  $\frac{7}{3}$
9. Triangle  $ABC$  is similar to  $XYZ$ .
- (a) Given that  $AB = 6$ ,  $AC = 7$  and  $XY = 11$ , find  $XZ$ .  $\frac{77}{6}$
- (b) If the area of triangle  $ABC$  is  $20\text{cm}^2$  find the area of triangle  $XYZ$ .  $\frac{605}{9}$
10. The point  $(3, 2)$  is rotated  $90^\circ$  clockwise about the point  $(1, -1)$ . Find the image point.  $(4, -3)$
11. Sketch the curve  $y = x^2 + 2x - 8$ , giving the three coordinates where the curve crosses the axes and the vertex.  $(0, -8), (2, 0), (-4, 0), (-1, -9)$
12. Two childrens toys are mathematically similar. The sticker on the smaller one has area  $20\text{cm}^2$ . The sticker on the larger one is  $45\text{cm}^2$ . If the volume of the smaller one is  $210\text{cm}^3$ , find the volume of the larger one.  $708.75$
13. Solve  $\begin{cases} 2x + y = 3 \\ 2x^2 + y^2 = 3 \end{cases}$ .  $(1, 1)$  repeated