2021 Worksheet 1

Year 12 Mathematics

1. (a) Complete the table for **addition modulo** 5

+	0	1	2	3	4
0					
1					
2					
3					
4					

(b) Show that this system is a **group.**

2. Simplify

(a) $\dfrac{7}{\sqrt{8}+1}$ (b) $\dfrac{3}{\sqrt{2}-1}$ (c) $\dfrac{36^{x-2}}{6^{x}}$ (d) $\dfrac{x+2}{x^{2}-4}$

3. Use the **quadratic formula** $x=\dfrac{-b\pm\sqrt{b^{2}-4ac}}{2a}$ to solve the equation $x^{2}=4x+12$

4. Find the **discriminant** and state the **nature of roots** for the following quadratic equations.

(a) $4x^{2}+12x+9=0$ (b) $3x^{2}+2x+6=0$

(c) $x^{2}+9x-2=0$ (d) $x^{2}-7x-8=0$