

**BUGWERE HIGH SCHOOL BUDAKA**  
**S.5 MID TERM ONE EXAMINATION 2024**  
**P425/1 PURE MATHEMATICS**  
**2 HOURS**

***INSTRUCTIONS***

***Attempt all questions in this paper.***

1. Without using tables or calculators, simplify

$$\frac{(3+\sqrt{5})(\sqrt{2}-2)(2+\sqrt{2})}{(\sqrt{5}-1)(1+\sqrt{2})}$$

5 marks

2. Solve the equation  $4^{2x} - 4^{x+1} - 4 = 0$

5

marks

3. Solve for x in  $(\log_4 x)(\log_2 x) = 0$

5

marks

4. Solve  $\sin^4 \theta - 10\cos^2 \theta + 3 = 0$  for  $0^\circ \leq \theta \leq 180^\circ$

5

marks

5. Given that  $p^2 = qr$ , show that  $\log_q p + \log_r p = 2\log_q p \log_r p$  5 marks

6. Simplify  $\frac{\sqrt{2}+\sqrt{3}}{1+\sqrt{2}+\sqrt{3}}$

5 marks

7. Solve for x in  $\sqrt{x+8} - \sqrt{x+3} = \sqrt{2x-1}$

5 marks

8. Write down the values of the following, leaving your answers as surds

a)  $\sin 765^\circ$

b)  $\cos 405^\circ$

5 marks

9. Solve the equation  $2\sin^2 x + 3\cos x = 0$  for  $-180^\circ \leq x \leq 180^\circ$

5 marks

10. Without using tables or calculators, evaluate  $\frac{\log_6 216 + \log_2 64}{\log_3 243 - \log_{10} 0.1}$