CfE Higher Maths Homework ②

① Simplify   (a) $\log_{10} 2 + \log_{10} 500$

                     (b) $\log_3 6 + \log_3 12 - \log_3 8$

                     (c) $2\log_{10} 2 + 2\log_{10} 5$

                     (d) $\frac{1}{2}\log_2 16 - \frac{1}{3}\log_2 8$

② If $p = 3\log_2 \frac{q}{r}$ find the value of p when

     (a) $q = 16, \; r = 4$ (b) $q = 80, \; r = 10$

③ Simplify   (a) $\sin \frac{3\pi}{4} \cos \frac{\pi}{4} - \cos \frac{3\pi}{4} \sin \frac{\pi}{4}$

                     (b) $\sin 15° \cos 45° + \cos 15° \sin 45°$

④ Given that P and Q are acute angles with

     $\sin P = \frac{3}{5}$ and $\sin Q = \frac{8}{17}$, show that $\sin(P+Q) = \frac{77}{85}$

                                 (Hint Draw triangles first!)

Exam Questions.

⑤   Evaluate $\log_5 2 + \log_5 50 - \log_5 4$.

⑥   If $x°$ is an acute angle such that $\tan x° = \frac{4}{3}$, show that the exact value of $\sin(x° + 30°)$ is $\dfrac{4\sqrt{3}+3}{10}$.