How to save time in Part IA Engineering Exams:
Know how to use your calculator

Some calculator exercises for IA Engineers

It is clear from many answers in CUED Tripos examinations that candidates are simply unfamiliar with the standard-issue calculator and thereby lose marks. Please take time to do these exercises *as far as possible without the aid of a pen and paper*.

Use your CUED-approved calculator to find x in the following:

1. $\cos 2x + 1 = 0.5$ (answer in radians)

2. $\sin^3 x = 1/9$ (answer in degrees)

3. $\cos^{-1} x = \pi/12$

4. $\cosh 2x = 3$

5. $\sinh x + \tanh 2 = 4$

6. $e^x - 4 = \ln 2$

7. $10^x - 4^{3.8} = \log 2$

8. $x^2 = \log_2 6$

9. $\log_5 x = 2.4$

10. $(2.034 - 1.345\,i)\,x = (1.075 + 2.310\,i)\,(-2.762 + 11.32\,i)$
    give your answer in the form $a + i\,b$
    and in the form $r\,e^{i\theta}$

Answers:

1. ±1.047
2. 28.73°, 151.27°
3. 0.9659
4. ±0.8814
5. 1.830
6. -1.546
7. -2.289
8. ±1.608
9. 47.59
10. $-11.27 - 4.606\,i \;\;=\;\; 12.17\,e^{-2.7541}$