

## Handout 4: Irrational to the Core

1. Solve  $y = 3^x + 2^{2x} + 1$  for  $x = 3$ .
2. Solve  $y = \log_5(5x) + \log e^x$  for  $x = 2$ .
3. Solve  $y^2 = \log x^2$  for  $x = 5$ .
4. Solve  $y = \log_4(16x^2)$  for  $x = 4$  without a calculator.
5. Solve  $y = \ln(4e^2)$ .
6. Simplify and solve  $10^{5x+y} = 100^{(2x)}$  for  $x = 2$  without a calculator.
7. Simplify and solve  $y = 6^{\log_6(2x^2)}$  for  $x = 4$  without a calculator.
8. Simplify and solve  $4y = \ln e^{(15x+y)}$  for  $x = 3$  without a calculator.
9. Simplify and solve  $y = \log_7(49^{-2x})$  for  $x = 4$  without a calculator.
10. Solve  $y = e^{\ln(2x+7)} + 2x^{(\log_{10} 16)} - 2\log(3x)$  for  $x = 5$ .