

## Complex numbers

- If  $z_1 = 3 + 8i$  and  $z_2 = -2 - 4i$  what are
  - $z_1 + z_2$ ?  $1 + 4i$
  - $z_1 z_2$ ?  $26 - 28i$
  - $z_2 z_1$ ?  $26 - 28i$  (commutative rule applies to complex numbers as well as real numbers)
  - $z_1 / z_2$ ?  $-19/10 - i/5$
  - $z_2 / z_1$ ?  $-38.73 + 4/73i$
- Solve the equation  $z^2 + 2z + 5 = 0$ . There are two roots which can be found from the quadratic equation
  - $-1 + 2i$
  - $-1 - 2i$
- Solve the equation  $z^2 - (2-3i)z + 10 + 24i = 0$ . Using the quadratic equation you can get the solution as

$$z = \frac{(2-3i) \pm \sqrt{(-45-108i)}}{2} = \frac{(2-3i) \pm 3i\sqrt{(5+12i)}}{2}$$

Next week we shall see how to evaluate the square root in this expression.