

# W15 Stepwise

Due date: Thursday 4/23, 11:59pm

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## Complex arithmetic

Write each of these expressions in the form  $a + bi$ .

(a)  $(1 + 3i)(5 - i)$     (b)  $\frac{2 + 5i}{-3 + 7i}$

**✍ Complex solutions of quadratic equations**

Find all solutions and write them in the form  $z = a + bi$ .

$$2z^2 + z + 1 = 0$$

**✍ Complex forms - exponential to Cartesian**

Write each number in the form  $a + bi$ .

(a)  $2e^{i\frac{\pi}{4}}$     (b)  $e^{\ln 4 + i\frac{\pi}{2}}$

**✍ Polar and exponential form**

Write down Euler's Formula.

Now write  $-5 + 5i$ :

(i) in polar form    (ii) in exponential form

 **Complex roots using polar**

Find the three cube ( $3^{\text{rd}}$ ) roots of  $27i$ .

Write your answer in the form  $a + bi$ .