# MA166: Recitation 13

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April 21, 2016

# 1 Homework

## 1.1 This Week's Summary

### Homework Problems

Solutions to selected problems:

#### Homework 35

**Problem 1** (WebAssign HW 35, # 1)**.** Sketch the curve with the given polar equation by first sketching the graph of $r$ as a function of $\theta$ in Cartesian coordinates

$$r = \theta, \quad \theta \geq 0 \quad .$$

**Problem 2** (WebAssign HW 35, # 2)**.** Sketch the curve with the given polar equation by first sketching the graph of $r$ as a function of $\theta$ in Cartesian coordinates.

$$r = \ln \theta, \quad \theta \geq 1.$$

**Problem 3** (WebAssign HW 35, # 3)**.** Sketch the curve with the given polar equation by first sketching the graph of $r$ as a function of $\theta$ in Cartesian coordinates.

$$r = 6 \sin 4\theta.$$

**Problem 4** (WebAssign HW 35, # 4)**.** Sketch the curve with the given polar equation by first sketching the graph of $r$ as a function of $\theta$ in Cartesian coordinates.

$$r = \cos 4\theta.$$

**Problem 5** (WebAssign HW 35, # 5)**.** Sketch the curve with the given polar equation by first sketching the graph of $r$ as a function of $\theta$ in Cartesian coordinates.

$$r = 6 \cos 4\theta.$$

**Problem 6** (WebAssign HW 35, # 6)**.** Sketch the curve with the given polar equation by first sketching the graph of $r$ as a function of $\theta$ in Cartesian coordinates.

$$r = 1 - 2 \sin \theta.$$

**Problem 7** (WebAssign HW 35, # 7)**.** Sketch the curve with the given polar equation by first sketching the graph of $r$ as a function of $\theta$ in Cartesian coordinates.

$$r = 5 + 3 \sin \theta.$$

**Problem 8** (WebAssign HW 35, # 8)**.** Evaluate the expression and write your answer in the form $a + bi$.

$$\left(3 + \tfrac{5}{2}i\right) - \left(8 + \tfrac{9}{2}i\right)$$

**Problem 9** (WebAssign HW 35, # 9)**.** Evaluate the expression and write your answer in the form $a + bi$.

$$(6 + 7i)(9 - 4i).$$

**Problem 10** (WebAssign HW 35, # 10)**.** Evaluate the expression and write your answer in the form $a + bi$.

$$\overline{3 + 4i}.$$

**Problem 11** (WebAssign HW 35, # 11)**.** Evaluate the expression and write your answer in the form $a + bi$.

$$\frac{6 + 5i}{\overline{4 - 7i}}.$$

**Problem 12** (WebAssign HW 35, # 12)**.** Evaluate the expression and write your answer in the form $a + bi$.

$$5i^3.$$

**Problem 13** (WebAssign HW 35, # 13)**.** Evaluate the expression and write your answer in the form $a + bi$.

$$8i^{100}.$$

**Problem 14** (WebAssign HW 35, # 14)**.** Evaluate the expression and write your answer in the form $a + bi$.

$$\sqrt{-81}.$$

**Problem 15** (WebAssign HW 35, # 15)**.** Find the complex conjugate of the number $-4 + 6\sqrt{5}i$. Find the modulus of the number.

**Problem 16** (WebAssign HW 35, # 16)**.** Find all solutions to the equation.

$$4x^2 + 16 = 0.$$

**Problem 17** (WebAssign HW 35, # 17)**.** Find all solutions to the equation.

$$x^4 = 256.$$

**Problem 18** (WebAssign HW 35, # 18)**.** Find all solutions to the equation.

$$x^2 + 5x + 7 = 0.$$

**Homework 36**

**Problem 19** (WebAssign HW 36, # 1)**.** Write the number in polar form with argument between 0 and $2\pi$.

$$-6 + 6i.$$

**Problem 20** (WebAssign HW 36, # 2)**.** Write the number in polar form with argument between 0 and $2\pi$.

$$2i.$$

**Problem 21** (WebAssign HW 36, # 3)**.** Find polar forms for $zw$, $z/w$, and $1/z$ by first putting $z$ and $w$ into polar form.

$$z = 3\sqrt{3} + 3i \quad w = 3 + 3\sqrt{3}i.$$

**Problem 22** (WebAssign HW 36, # 4)**.** Write the number in the form $a + bi$.

$$3e^{i\pi/2}.$$

**Problem 23** (WebAssign HW 36, # 5)**.** Write the number in the form $a + bi$.

$$6e^{i\pi}.$$

**Problem 24** (WebAssign HW 36, # 6)**.** Write the number in the form $a + bi$.

$$6e^{5+i\pi}.$$