

HW 11A #3h*i* 11B #1, 2, 3

11A

3h.)  $x^2 - 2\sqrt{3}x + 4 = 0$      $a=1$   $b=-2\sqrt{3}$   $c=4$

$$x = \frac{2\sqrt{3} \pm \sqrt{(-2\sqrt{3})^2 - 4(1)(4)}}{2(1)} \Rightarrow x = \frac{2\sqrt{3} \pm \sqrt{(4)(3) - 16}}{2}$$

$$\Rightarrow x = \frac{2\sqrt{3} \pm \sqrt{12 - 16}}{2} \Rightarrow x = \frac{2\sqrt{3} \pm \sqrt{-4}}{2} \Rightarrow x = \frac{2\sqrt{3} \pm 2i}{2}$$

$$\Rightarrow \boxed{x = \sqrt{3} \pm i}$$

3i.)  $2x + \frac{1}{x} = 1$  multiply by  $x \Rightarrow 2x^2 + 1 = x$

$$\Rightarrow 2x^2 - x + 1 = 0 \quad a=2 \quad b=-1 \quad c=1$$

$$x = \frac{1 \pm \sqrt{(-1)^2 - 4(2)(1)}}{2(2)} \Rightarrow x = \frac{1 \pm \sqrt{1 - 8}}{4} \Rightarrow x = \frac{1 \pm \sqrt{-7}}{4}$$

$$\Rightarrow x = \frac{1 \pm i\sqrt{7}}{4} \Rightarrow \boxed{x = \frac{1 \pm \sqrt{7}i}{4}}$$

11B	$z$	$\text{Re}(z)$	$\text{Im}(z)$	$z^*$
	$3+2i$	3	2	$3-2i$
	$5-i$	5	-1	$5+i$
	3	3	0	3
	$4i$	0	4	$-4i$
	0	0	0	0
	$-3+4i$	-3	4	$-3-4i$
	$-7-2i$	-7	-2	$-7+2i$
	$-11i$	0	-11	$11i$
	$i\sqrt{3}$	0	$\sqrt{3}$	$-i\sqrt{3}$
	$1-i\sqrt{2}$	1	$-\sqrt{2}$	$1+i\sqrt{2}$

2.) a.)  $\text{real} = \{3, 0\}$

b.) pure imaginary

$$= \{4i, -11i, i\sqrt{3}\}$$

11B

$$3.) z = -1 + 4i, w = 6 - 5i$$

$$\begin{array}{lll} a.) \operatorname{Re}(z) = -1 & b.) \operatorname{Im}(w) = -5 & c.) z^* = -1 - 4i \\ d.) w^* = 6 + 5i & e.) \operatorname{Im}(z^*) = -4 & f.) \operatorname{Re}(w^*) = 6 \end{array}$$