

$$1) (2i-5) \cdot [(3i+4) - 2 \cdot (i-4)]$$

$$(2i-5) \cdot [(3i+4) - 2i+8]$$
$$[(3i-2i) + (4+8)]$$

$$(2i-5) \cdot (i+12)$$

$$2i^2 + 24i - 5i - 60 = -62 + 19i \quad \times$$

$$\alpha = \arctan\left(-\frac{19}{62}\right) + \pi$$

$$2) \quad z = -59 + 13i$$

$$z = -37 + 13i$$

$$2) \quad 4 \cdot (i-3)(3+i) - (i-2)(5+i)$$

$$16i - 48 - (5i + i^2 - 10 - 2i)$$

$$16i - 48 - 3i + 11 = -37 + 13i$$

$$3) \quad 4i^8 \cdot (4i - 2i^{11}) (i^3 + 2i) \cdot (4i + 1)$$

$$4 \cdot (4i + 2i) (i) (4i + 1)$$

$$-24 (4i + 1)$$

$$-96i - 24$$

$$4) \quad 15i^{11} - 3i(2i^7 + 2i^8) + 6i(2i - 5i^{15} + 3i^6)$$

$$-15i - 3i(-2i + 2) + 6i(7i - 3)$$

$$-15i - 6 - 6i - 42 - 18i$$

$$-48 - 39i$$

$$5) \quad \frac{3-2i}{i-1} \cdot \frac{i+1}{i+1} = \frac{3i+3+2-2i}{i^2-1^2} = \frac{5+i}{-2}$$

$$\frac{3i+4}{1-2i} \cdot \frac{1+2i}{1+2i} = \frac{3i-6+4+8i}{1-4i^2} = \frac{-2+11i}{5}$$

$$\frac{-25-5i+4-22i-3i-19}{10} = \frac{-40-30i}{10}$$

$$z = -4 - 3i$$

1) a)

p	q	r						
w	w	w	w	f	f	f	f	
w	w	f	f	w	w	f	f	
w	f	w	f	w	f	w	f	
qvr			w	w	w	f	w	w
<u>I</u> : $p \rightarrow (qvr)$			w	w	w	f	w	w
pvr			w	w	w	f	w	f
<u>II</u> : $\neg(pvr)$			f	f	f	f	w	w
<u>III</u> : $\underline{I} \wedge \underline{II}$			f	f	f	f	w	w
$\neg p$			f	f	f	f	w	w
<u>III</u> $\rightarrow \neg p$			w	w	w	w	w	w

$$E[A] = \text{Bool}^3$$

6)

p	q	r	v	
w	w	w	w	w
w	w	f	f	w
w	f	w	f	w
f	f	f	f	w
f	f	w	w	w
f	w	w	w	f
f	w	f	f	w
f	f	f	w	w
f	f	w	w	f

$(q \vee r)$	w	w	w	f	w	w	w	f
$p \leftrightarrow (q \vee r)$	w	w	w	f	f	f	f	w
$\bar{I}: \neg(\sim)$	f	f	f	w	w	w	w	f

$r \wedge q$	w	f	f	f	w	f	f	f
$\bar{II}: p \rightarrow r \wedge q$	w	f	f	f	w	w	w	w

$\bar{IV} \bar{II}$	w	<u>f</u>	<u>f</u>	w	w	w	w	w
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$$E[A] = \text{Bool}^3 \setminus \{(w, w, f), (w, f, w)\}$$