

Perform the indicated operation:

1) $(11 + 7i) + (-6 - 9i)$

$5 - 2i$

2) $8(4 - 10i) - 5(6 - 13i)$
 $32 - 80i - 30 + 65i$

$2 - 15i$

3) $4i(11 + 5i) - 8i(2 + 7i)$

~~$44i + 55i^2$~~
 $44i + 20i^2 - 16i - 56i^2$
 $44i + 20(-1) - 16i - 56(-1)$
 $44i - 20 - 16i + 56$

$36 + 28i$

4) $(15 - 11i)(8 + 6i)$

$120 + 90i - 88i - 66i^2$
 $120 + 90i - 88i - 66(-1)$
 $120 + 90i - 88i + 66$

$186 + 2i$

5) $(12 - 2i)(8 - 4i)$

$96 - 48i - 16i + 8i^2$
 $96 - 48i - 16i + 8(-1)$
 $96 - 48i - 16i - 8$

$88 - 64i$

6) $(14 + 3i)(3 - 12i)$

$42 - 168i + 9i - 36i^2$
 $42 - 168i + 9i - 36(-1)$
 $42 - 168i + 9i + 36$

$78 - 159i$

7) Simplify:

$i^{29} = i$

$i^{53} = i$

$i^{104} = 1$

$i^{75} = -i$

$i^{61} = i$

$i^{58} = -1$

$i^{121} = i$

$i^{53} = i$

$i^{145} = i$

$i^{999} = -i$

$$8) 12i^2(9-3i) - 14i(7-4i)$$

$$108i^2 - 36i^3 - 98i + 56i^2$$

$$108(-1) - 36(-i) - 98i + 56(-1)$$

$$-108 + 36i - 98i - 56$$

$$\boxed{-164 - 62i}$$

$$9) 6i^2(5+3i) - 7i^2(11-4i)$$

$$30i^2 + 18i^3 - 77i^2 + 28i^3$$

$$30(-1) + 18(-i) - 77(-1) + 28(-i)$$

$$-30 - 18i + 77 - 28i$$

$$\boxed{47 - 46i}$$

10) $\sqrt{-1,014}$

$$i\sqrt{1,014}$$

$$i\sqrt{169 \cdot 6}$$

$$\boxed{13i\sqrt{6}}$$

11) $\sqrt{-847}$

$$i\sqrt{847}$$

$$i\sqrt{121 \cdot 7}$$

$$\boxed{11i\sqrt{7}}$$

12) $-4\sqrt{-320}$

$$-4i\sqrt{320}$$

$$-4i\sqrt{64 \cdot 5}$$

$$-4i \cdot 8\sqrt{5}$$

$$\boxed{-32i\sqrt{5}}$$

13) $-10\sqrt{-968}$

~~$$-10i\sqrt{968}$$~~

$$-10i\sqrt{484 \cdot 2}$$

$$-10i \cdot 22\sqrt{2}$$

$$\boxed{-220i\sqrt{2}}$$

14) $16\sqrt{-540}$

$$16i\sqrt{540}$$

$$16i\sqrt{36 \cdot 15}$$

$$16i \cdot 6\sqrt{15}$$

$$\boxed{96i\sqrt{15}}$$

$$15) 13(7-8i) + 5(-12+6i)$$

$$91 - 104i - 60 + 30i$$

$$\boxed{31 - 74i}$$

$$16) 10i(9-8i) - 7(6+5i)$$

$$90i - 80i^2 - 42 - 35i$$

$$90i - 80(-1) - 42 - 35i$$

$$90i + 80 - 42 - 35i$$

$$\boxed{38 + 65i}$$

$$17) 14(11+8i) + 13i(10+7i)$$

$$154 + 112i + 130i + 91i^2$$

$$154 + 112i + 130i + 91(-1)$$

$$154 + 112i + 130i - 91$$

$$\boxed{63 + 242i}$$

$$18) 16i(5-i) - 9i^2(-12-7i)$$

$$80i - 16i^2 + 108i^2 + 63i^3$$

$$80i - 16(-1) + 108(-1) + 63(-i)$$

$$80i + 16 - 108 - 63i$$

$$\boxed{-92 + 17i}$$