Unit 1 Test Review

Simplify the radical expression

1) $\sqrt{-9}$

$\pm 3i$

2) $\sqrt{-169}$

$\pm 13i$

3) $\sqrt{-72}$

$\sqrt{36} \cdot \sqrt{2} \cdot \sqrt{-1}$

$\pm 6i\sqrt{2}$

4) $\sqrt{-200}$

$\sqrt{100} \cdot \sqrt{2} \cdot \sqrt{-1}$

$\pm 10i\sqrt{2}$

Add or subtract as indicated

5) $(3-4i)+(6+7i)$

$9+3i$ ✓

6) $(7+3i)-(-9+i)$

$7+3i+9-i$

$16+2i$ ✓

7) $(9-3i)+(5+6i)$

$14+3i$ ✓

8) $(9+8i)-(2+8i)+(9+2i)$

$9+8i-2-8i+9+2i$

$16+2i$ ✓

Multiply

9) $9i(9-8i)$

$81i-72i^2$

$81i+72$ ✓

10) $(8-3i)(3+2i)$

$24+16i-9i-6i^2$

$24+7i+6$

$30+7i$

11) $(4-2i)^2$

$(4-2i)(4-2i)$

$16-8i-8i+4i^2$

$16-16i-4$

$12-16i$

Divide

12) $\frac{2}{5-3i} \cdot \frac{(5+3i)}{(5+3i)}$

$\frac{10+6i}{25-9i^2}$

$\frac{10+6i}{25+9} = \frac{10+6i}{34}$

$\frac{10}{34} + \frac{6i}{34}$

$\frac{5}{17} + \frac{3i}{17} = \boxed{\frac{5+3i}{17}}$

13) $\frac{8i}{4+9i} \cdot \frac{(4-9i)}{(4-9i)}$

$\frac{32i-72i^2}{16-81i^2}$

$\frac{32i+72}{16+81} = \boxed{\frac{32i+72}{97}}$

14) $\frac{(-4+8i)}{-6i} \cdot \frac{6i}{(6i)} = \frac{-24i+48i^2}{-36i^2}$

$\frac{-24i-48}{36}$

$\frac{-2i}{3} - \frac{4}{3}$

$\boxed{\frac{-2i-4}{3}}$

Simplify

15) i^{16}

$= 1$

16) i^{19}

$-i$

17) i^{21}

i

18) i^{14}

-1