Writing Complex Numbers in Standard Form (ALG.CN.03)

Write each power of i as i, $-i$, 1, or -1.

1. i^{21} $\boldsymbol{i}$
2. i^{36} $\boldsymbol{1}$
3. i^{47} $\boldsymbol{-i}$
4. i^{62} $\boldsymbol{-1}$

Simplify each expression by first rewriting each power of i.

5. $i^{37} + 3i^{25}$ $\boldsymbol{4i}$
6. $8i^{76} - 3i^{74}$ $\boldsymbol{11}$
7. $2i^{17} + 5i^{31}$ $\boldsymbol{-3i}$
8. $11i^{10} - 6i^{28}$ $\boldsymbol{-17}$
9. $5i^{7} + 3i^{10}$ $\boldsymbol{-3 - 5i}$
10. $-20i^{6} - 13i^{21}$ $\boldsymbol{20 - 13i}$

Write each complex number in standard form.

11. $5 + \sqrt{-49}$ $\boldsymbol{5 + 7i}$
12. $15 - \sqrt{-144}$ $\boldsymbol{15 - 12i}$
13. $\frac{3}{4}\sqrt{-16}$ $\boldsymbol{3i}$
14. $\frac{\sqrt{-81}}{6}$ $\boldsymbol{\frac{3}{2}i}$
15. $-\sqrt{108} + \sqrt{-50}$ $\boldsymbol{-6\sqrt{3} + 5\sqrt{2}i}$
16. $5\sqrt{90} - 3\sqrt{-90}$ $\boldsymbol{15\sqrt{10} - 9\sqrt{10}i}$
17. $\sqrt{-0.04}$ $\boldsymbol{0.2i}$
18. $\sqrt{-0.000169}$ $\boldsymbol{0.013i}$
19. $\left(\sqrt{-18}\right)^3$ $\boldsymbol{-54\sqrt{2}i}$
20. $\left(\sqrt{-3}\right)^6$ $\boldsymbol{-27}$
21. $(2i^3)^5$ $\boldsymbol{-32i}$
22. $(-4i^6)^3$ $\boldsymbol{64}$