

**Practice on Imaginary Numbers**

Note: Go to <http://www.purplemath.com/modules/complex.htm> for more help.

Simplify the following:

1.  $\sqrt{-25}$

2.  $\sqrt{-81} + 2\sqrt{-64}$

3.  $-3i\sqrt{49} \cdot \sqrt{56}$

4.  $2\sqrt{-50} + 3\sqrt{-1000}$

5.  $\sqrt{-18} \cdot \sqrt{-4}$

6.  $3i \cdot \sqrt{-200}$

7.  $6i \cdot \sqrt{-64 \cdot 81} \cdot \sqrt{-49}$

8.  $i + \sqrt{-81}$

9.  $\sqrt{-9} \cdot \sqrt{-36}$

10.  $4(3i + 6i) + \sqrt{-36}$

11.  $\sqrt{-90}$

12.  $2i\sqrt{2} + \sqrt{-72}$

13.  $\sqrt{-5}^2 \cdot \sqrt{-5}^2$

14.  $\sqrt{-25}^2 + \sqrt{-25}$

15.  $i^6$

16.  $i^{2006}$

17.  $(3i)^3$

18.  $2\sqrt{-50} - \sqrt{32}$

19.  $-6i \cdot \sqrt{-36}$

20.  $\frac{\sqrt{-18}}{2}$

21.  $\frac{5 \cdot 4}{6i}$

22.  $\frac{i^2 \cdot \sqrt{-28}}{\sqrt{-49}}$

To simplify a radical first write it out as prime factors. Then for each pair of identical numbers, take one of them 'outside.' Then simplify.

Ex1:  $\sqrt{200}$   
 $\sqrt{2 \cdot 2 \cdot 2 \cdot 5 \cdot 5}$   
 $2 \cdot 5 \sqrt{2}$   
 $10\sqrt{2}$

Ex2:  $\sqrt{60}$   
 $\sqrt{2 \cdot 2 \cdot 3 \cdot 5}$   
 $2\sqrt{15}$