

# Quiz Review

Name \_\_\_\_\_

Write each of the following expressions as a **simplified** complex number in standard form.

3.)  $(\underline{5} - \underline{7i}) + (\underline{3} - \underline{2i})$   
 $\boxed{8 - 9i}$

4.)  $(8 + 4i) - (6 - 3i)$   
 $\underline{8} + \underline{4i} - \underline{6} + \underline{3i}$   
 $\boxed{2 + 7i}$

5.)  $(-9 - i) + 3i - (6 + 2i)$   
 $\underline{-9} - \underline{i} + \underline{3i} - \underline{6} - \underline{2i}$   
 $-15 + 0i$   
 $\boxed{-15}$

6.)  $6i(1 - 5i)$   
 $6i - 30i^2$   
 $6i - 30(-1)$   
 $\boxed{6i + 30}$

7.)  $(4 - i)(2 + i)$  FOIL  
 $8 + 4i - 2i - i^2$   
 $8 + 2i - (-1)$   
 $8 + 2i + 1$   
 $\boxed{9 + 2i}$

8.)  $(2 - 7i)(-8 - 3i)$   
 $-16 - 6i + 56i + 21i^2$   
 $-16 + 50i + 21(-1)$   
 $-16 + 50i - 21$   
 $\boxed{-37 + 50i}$

9.)  $(6 + 5i)^2 = (6 + 5i)(6 + 5i)$

$36 + 30i + 30i + 25i^2$

$36 + 60i + 25(-1)$

$36 + 60i - 25$

$\boxed{11 + 60i}$

Evaluate each complex number. You may need to simplify the radical as well.

1)  $\sqrt{-49} = \sqrt{-1} \cdot \sqrt{49}$   
 $\boxed{7i}$

2)  $\sqrt{-48} = \sqrt{-1} \cdot \sqrt{16} \cdot \sqrt{3}$   
 $i \cdot 4 \cdot \sqrt{3}$   
 $\boxed{4i\sqrt{3}}$

3)  $\sqrt{-5} \cdot \sqrt{-8}$   
 $\sqrt{-1} \cdot \sqrt{5} \cdot \sqrt{-1} \cdot \sqrt{4} \cdot \sqrt{2}$   
 $i\sqrt{5} \cdot 2i\sqrt{2}$   
 $2i^2\sqrt{10}$   
 $\boxed{-2\sqrt{10}}$

4)  $(-5i)(-i)(11)$   
 $55i^2$   
 $55(-1)$   
 $\boxed{-55}$

8.  $(2i)^3 \rightarrow (2i)(2i)(2i)$   
 a.  $8i$   
 b.  $\boxed{-8i}$   
 c.  $6i$   
 d.  $-6i$   
 $8i^3$   
 $8(-i)$   
 $\boxed{-8i}$

9)  $i^{26} = -1$

10)  $i^{17} = i$

9.  $i^{15}$

- $r=0 \rightarrow 1$
- $r=1 \rightarrow i$
- $r=2 \rightarrow -1$
- $r=3 \rightarrow -i$

2.)  $i^{1066} = -1$

- a.  $i$
- b.  $\boxed{-i}$
- c.  $1$
- d.  $-1$

Simplify the following expressions

13.  $(3 + 4i) + 2i(2 - 5i)$

- a.  $-7 + 8i$       b.  $-13 + 8i$       c.  $13 + 8i$       d.  $7 + 8i$

14.  $5i^4 + 3i^3 - 4i^2 + 5i - 3 \rightarrow 5(1) + 3(-i) - 4(-1) + 5i - 3$

- a.  $6 + 2i$       b.  $6 - 2i$       c.  $-6 + 2i$       d.  $-6 - 2i$

$6 + 2i$

15.  $(3 - 5i)^2$

- a.  $34 - 30i$       b.  $34 + 30i$       c.  $-16 - 30i$       d.  $-16 + 30i$

16.  $i^{47}$

- a. 1      b.  $i$       c. -1      d.  $-i$

Write the following expressions in imaginary form: (2N1a)

1.  $\sqrt{-16} = \sqrt{-1} \cdot \sqrt{16} = i \cdot 4 = 4i$

- a.  $-4i$       b.  $4i$       c.  $-16i$       d.  $16i$

2.  $\sqrt{-300} = \sqrt{-1} \cdot \sqrt{100} \cdot \sqrt{3} = 10i\sqrt{3}$

- a.  $10\sqrt{3}$       b.  $-10\sqrt{3}$       c.  $-10i\sqrt{3}$       d.  $10i\sqrt{3}$

3.  $-3\sqrt{-49}$

- a.  $-21i$       b.  $21i$       c.  $-147i$       d.  $147i$

4.  $-2\sqrt{-\frac{12}{3}}$

- a. -4      b. 4      c.  $-4i$       d.  $4i$



$$\begin{aligned}
 & -2 \cdot \sqrt{-1} \cdot \sqrt{12} \cdot \sqrt{\frac{1}{3}} \\
 & -2 \cdot \sqrt{-1} \cdot \sqrt{4} \cdot \sqrt{3} \cdot \sqrt{\frac{1}{3}} \\
 & -2 \cdot i \cdot 2 \cdot \sqrt{3} \cdot \sqrt{\frac{1}{3}} \\
 & -4i \cdot \sqrt{\frac{3}{3}} \\
 & -4i \cdot \sqrt{1} = -4i
 \end{aligned}$$

\* Not going to have one this difficult on quiz