

**SHOW ALL WORK!**

**Simplify. Write the result in standard form.**

1.  $(5+2i) - (5-8i)$

$5+2i - 5+8i$

$0+10i$

2.  $(4-8i) + (5+3i)$

$9-5i$

3.  $(5+\sqrt{-8}) - (2-\sqrt{-32})$   
 $(5+2\sqrt{2}) - (2-4i\sqrt{2})$   
 $5+2\sqrt{2} - 2 + 4i\sqrt{2}$   
 $3+6i\sqrt{2}$

4.  $(7-\sqrt{-125}) + (5+\sqrt{-5})$   
 $7-5i\sqrt{5} + 5+i\sqrt{5}$   
 $12-4i\sqrt{5}$

5.  $(6+5i)(2-5i)$

$12 - 35i + 10i - 25i^2$

$12 - 26i + 25$

$37 - 26i$

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

$9 + 21i - 21i - 49i^2$

$9 + 49$

$58 + 0i$

7.  $\frac{4-8i}{4i} \cdot \frac{i}{i}$

$\frac{4i-8i^2}{4i^2}$

$\frac{4i+8}{-4}$

$\frac{8}{-4} + \frac{4i}{-4}$   
 $-2-i$

8.  $\frac{5i}{2-3i} \cdot \frac{2+3i}{2+3i}$

$\frac{10i+15i^2}{4-9i^2}$

$\frac{-15+10i}{4+9}$

$\frac{-15}{13} + \frac{10i}{13}$

$$9. \frac{4i}{4-8i} \cdot \frac{4+8i}{4+8i}$$

$$\frac{16i + 32i^2}{16 - 64i^2}$$

$$\frac{-32 + 16i}{16 + 64}$$

$$\frac{-32}{80} + \frac{16i}{80}$$

$$-\frac{2}{5} + \frac{1}{5}i$$

$$10. \frac{2-3i}{5i} \cdot \frac{i}{i}$$

$$\frac{2i - 3i^2}{5i^2}$$

$$\frac{3 + 2i}{-5}$$

$$-\frac{3}{5} - \frac{2i}{5}$$

Evaluate and write your answer in standard form.

$$11. \sqrt{-50} \cdot \sqrt{2}$$

$$25\sqrt{2}$$

$$5i\sqrt{2} \cdot \sqrt{2}$$

$$0 + 10i$$

$$12. \sqrt{-12} \cdot \sqrt{-27}$$

$$4\sqrt{3} \cdot 9\sqrt{3}$$

$$2i\sqrt{3} \cdot 3i\sqrt{3}$$

$$6i^2\sqrt{9}$$

$$-18 + 0i$$

Solve for x and y.

$$13. (2y-7) + (3x+4)i = 1+i$$

Reals

$$2y-7 = 1$$

$$2y = 8$$

$$y = 4$$

Imag

$$3x+4 = 1$$

$$3x = -3$$

$$x = -1$$

$$14. \frac{(2+x) + (y+3)i}{1-i} = -3+i \quad \cdot (1-i)$$

$$(2+x) + (y+3)i = -3 + 3i + i - i^2$$

$$(2+x) + (y+3)i = -2 + 4i$$

Reals

$$2+x = -2$$

$$x = -4$$

Imaginary

$$y+3 = 4$$

$$y = 1$$