

New Bedford Public Schools  
Division of Adult & Continuing Education

## **New Bedford High School Evening Extension**

2019 – 2020 School Year  
Trimester III

Learning Packet #4  
for  
**Algebra II**

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Email Mr. Alves with questions/concerns regarding this packet at the email address listed above.

Due date: May 12, 2020

## Rationalizing Imaginary Denominators

**Simplify.**

1)  $\frac{2}{8i}$

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

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

4)  $\frac{-1}{-9i}$

5)  $\frac{6}{-4i}$

6)  $\frac{6+8i}{9i}$

7)  $\frac{4-9i}{-6i}$

8)  $\frac{-3+10i}{-6i}$

9)  $\frac{-1+8i}{-i}$

10)  $\frac{10-10i}{-5i}$

11)  $\frac{5i}{-2-6i}$

12)  $\frac{8i}{-1+3i}$

$$13) \frac{1}{-8-5i}$$

$$14) \frac{i}{-2-8i}$$

$$15) \frac{4}{-3-6i}$$

$$16) \frac{-10-5i}{-6+6i}$$

$$17) \frac{-5-9i}{9+8i}$$

$$18) \frac{-4+10i}{3+4i}$$

$$19) \frac{-5-3i}{7-10i}$$

$$20) \frac{-3-7i}{7+10i}$$

$$21) \frac{-1+i}{-5i}$$

$$22) \frac{-6-i}{i}$$

$$23) \frac{2+5i}{-i}$$

$$24) \frac{-4-4i}{4i}$$

$$25) \frac{3}{-i}$$

$$26) \frac{a}{ib}$$



## Operations with Complex Numbers

**Simplify.**

1)  $i + 6i$

2)  $3 + 4 + 6i$

3)  $3i + i$

4)  $-8i - 7i$

5)  $-1 - 8i - 4 - i$

6)  $7 + i + 4 + 4$

7)  $-3 + 6i - (-5 - 3i) - 8i$

8)  $3 + 3i + 8 - 2i - 7$

9)  $4i(-2 - 8i)$

10)  $5i \cdot -i$

11)  $5i \cdot i \cdot -2i$

12)  $-4i \cdot 5i$

13)  $(-2 - i)(4 + i)$

14)  $(7 - 6i)(-8 + 3i)$

15)  $7i \cdot 3i(-8 - 6i)$

16)  $(4 - 5i)(4 + i)$

17)  $(2 - 4i)(-6 + 4i)$

18)  $(-3 + 2i)(-6 - 8i)$

19)  $(8 - 6i)(-4 - 4i)$

20)  $(1 - 7i)^2$

21)  $6(-7 + 6i)(-4 + 2i)$

22)  $(-2 - 2i)(-4 - 3i)(7 + 8i)$

23)  $5i + 7i \cdot i$

24)  $(6i)^3$

25)  $6i \cdot -4i + 8$

26)  $-6(4 - 6i)$

27)  $(8 - 3i)^2$

28)  $3 + 7i - 3i - 4$

29)  $-3i \cdot 6i - 3(-7 + 6i)$

30)  $-6i(8 - 6i)(-8 - 8i)$

**Critical thinking questions:**

31) How are the following problems different?

Simplify:  $(2 + x)(3 - 2x)$

Simplify:  $(2 + i)(3 - 2i)$

32) How are the following problems different?

Simplify:  $2 + x - (3 - 2x)$

Simplify:  $2 + i - (3 - 2i)$

### Properties of Complex Numbers

**Find the absolute value of each complex number.**

1)  $|7 - i|$

2)  $|-5 - 5i|$

3)  $|-2 + 4i|$

4)  $|3 - 6i|$

5)  $|10 - 2i|$

6)  $|-4 - 8i|$

7)  $|-4 - 3i|$

8)  $|8 - 3i|$

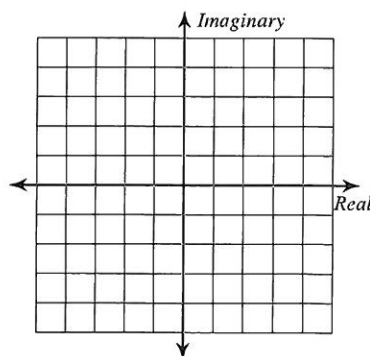
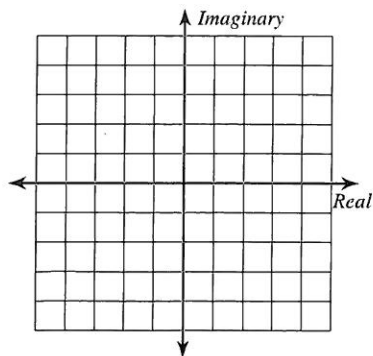
9)  $|1 - 8i|$

10)  $|-4 + 10i|$

**Graph each number in the complex plane.**

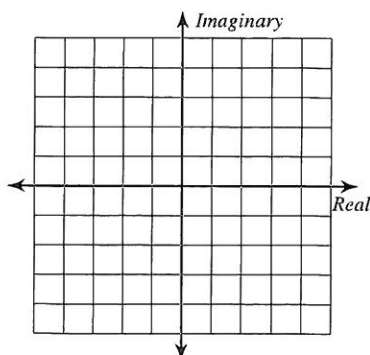
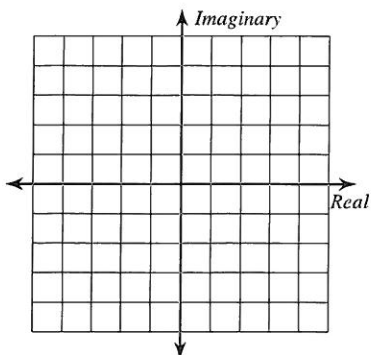
11)  $-3 + 4i$

12)  $-1 + 5i$

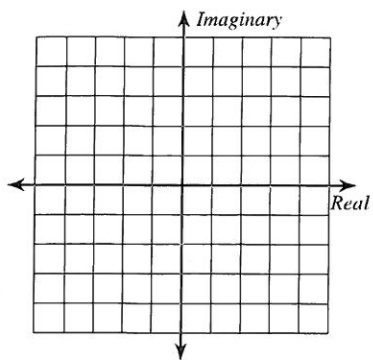


13)  $-1 - 4i$

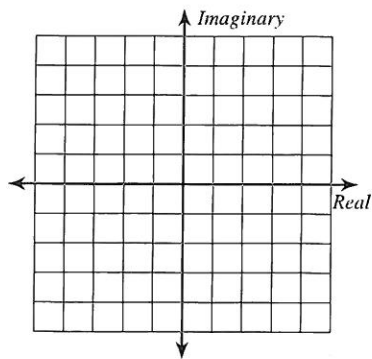
14)  $4 + 4i$



15)  $-3 + 5i$

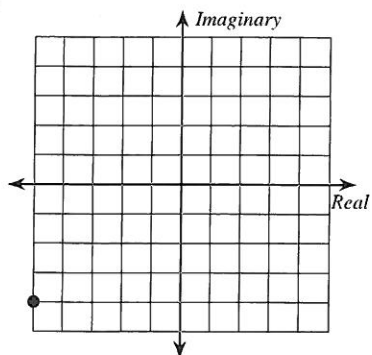


16)  $2 + 4i$

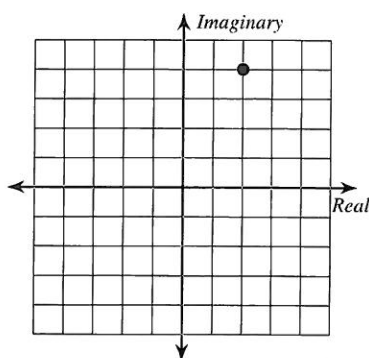


Identify each complex number graphed.

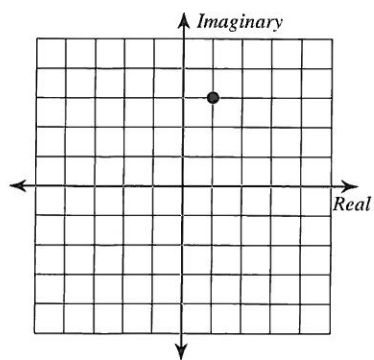
17)



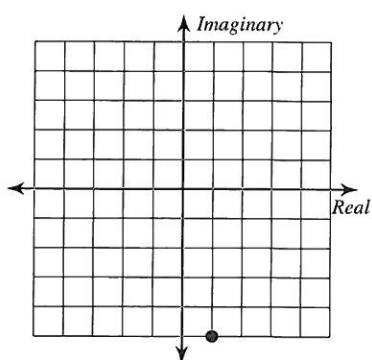
18)



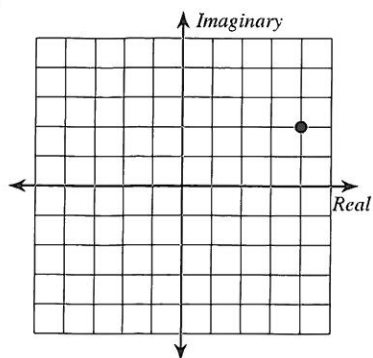
19)



20)



21)



22)

