Homework
9/29/15

1. What is the conjugate of $-2 + 3i$?

   1. $-3 + 2i$
   2. $-2 - 3i$
   3. $2 - 3i$
   4. $3 + 2i$

2. The value of $(2i^3)^3$ is

1. -6 3. -8
2. $6i$ 4. $8i$

3. Express $\frac{5}{2-i}$ in simplest $a + bi$ form.

1. $2i$ 3. $2 - i$
2. $i - 2$ 4. $2 + i$

4. The expression $2i^2 + 3i^3$ is equivalent to

   1. $-2 - 3i$
   2. $2 - 3i$
   3. $-2 + 3i$
   4. $2 + 3i$

5. What is the product of $5 + \sqrt{-36}$ and $1 - \sqrt{-49}$, expressed in simplest $a + bi$ form?

1. $-37 + 41i$ 3. $47 + 41i$
2. $5 - 71i$ 4. $47 - 29i$

6. The product of i^7 and i^5 is equivalent to

1. 1 3. i
2. -1 4. $-i$

7. The expression $(1 + i)^2$ is equivalent to

1. 1 3. i
2. 2 4. $2i$

8. If x and y are real numbers, find the value of x that makes the statement $(2x + 5) + (1 – y)i = –3 – 4i$ true.

1. 1 3. 5
2. –4 4. 7

9. What is the conjugate of the complex number $7 + 12i$?

1. $–7 + 12i$
2. $–7 – 12i$
3. $12 + 7i$
4. $7 – 12i$

10. The conjugate of $7 − 5i$ is

1. $−7 − 5i$
2. $−7 + 5i$
3. $7 − 5i$
4. $7 + 5i$

11. Simplify the expression $\frac{2-4i}{i}$ and put it into $a + bi$ form.

1. $−4 − 2i$
2. $4 − 2i$
3. $−2 − 4i$
4. $2 − 4i$

12. What is the sum of $\sqrt{-2}$ and $\sqrt{-18}$?

1. $5i\sqrt{2}$
2. $4i\sqrt{2}$
3. $2i\sqrt{2}$
4. $6i$

13. What is the conjugate of $–3 + 2i$?

1. $–2 + 3i$
2. $3 – 2i$
3. $–3 – 2i$
4. $2 – 3i$

14. Express the multiplicative inverse of $\frac{4-5i}{10}$ in $a + bi$ form.

1. $\frac{40+50i}{-9}$
2. $\frac{4+5i}{10}$
3. $\frac{90i}{41}$
4. $\frac{40+50i}{41}$

15. Express the sum of $\sqrt{-81}$ and $3\sqrt{-25}$ as a monomial in terms of i.

1. $-6i$ 3. $14i$
2. $12i$ 4. $24i$

16. The expression $(3 - 7i)^2$ is equivalent to:

1. $-40 + 0i$
2. $-40 - 42i$
3. $58 + 0i$
4. $58 - 42i$

17. What is the value of $i^{99} - i^3$?

1. 1 3. $-i$
2. i^{96} 4. 0

18. The product of $a + bi$ and its conjugate is

1. always a real number
2. always an imaginary number
3. can be either a real number or an imaginary number
4. always a negative number

19. The expression $\frac{2+i}{3+i}$ is equivalent to

1. $\frac{6+5i}{8}$
2. $\frac{6+i}{8}$
3. $\frac{7-5i}{10}$
4. $\frac{7+i}{10}$

20. Express the multiplicative inverse of $3i + 1$ in $a + bi$ form.

1. $\frac{1-3i}{10}$
2. $\frac{-1-3i}{10}$
3. $\frac{-1+3i}{10}$
4. $\frac{1-3i}{-10}$

21. When the sum of $4 + 5i$ and $-3 - 7i$ is represented graphically, in which quadrant does the sum lie?

1. I
2. II
3. III
4. IV

22. Expressed in $a + bi$ form, $(1 + 3i)^2$ is equivalent to

1. $10 + 6i$
2. $-8 + 6i$
3. $10 - 6i$
4. $-8 - 6i$

23. If $x = 3i$, $y = 2i$, and $z = m + i$, the expression xy^2z equals

1. $-12 - 12mi$
2. $-6 - 6mi$
3. $12 - 12mi$
4. $6 - 6mi$

24. When represented graphically, in which quadrant does the sum of $-4 - i$ and $3 + 4i$ lie?

1. I
2. II
3. III
4. IV

25. In simplest form, $\sqrt{-300}$ is equivalent to

1. $3i\sqrt{10}$
2. $5i\sqrt{12}$
3. $10i\sqrt{3}$
4. $12i\sqrt{5}$

26. The complex number $c + di$ is equal to $(2 + i)^2$. What is the value of c?

Answer: $c =$ [ ]

27. If $\sqrt{-28}$ is subtracted from $\sqrt{-63}$, the difference is

1. i
2. $i\sqrt{7}$
3. $-i\sqrt{7}$
4. $\sqrt{-35}$

28. Simplify the expression $\frac{5+5i}{5i}$ and put it into $a + bi$ form.

1. $\frac{i-5}{5}$
2. $1 - i$
3. $1 + i$
4. $5 - i$

29. In what quadrant does the difference of $-8 - 6i$ and $-6 - 7i$ lie?

1. I
2. II
3. III
4. IV

30. In an electrical circuit, the voltage, E, in volts, the current, I, in amps, and the opposition to the flow of current, called impedance, Z, in ohms, are related by the equation $E = IZ$. A circuit has a current of $(3 + i)$ amps and an impedance of $(-2 + i)$ ohms. Determine the voltage in $a + bi$ form.

$V =$ [ ] $+$ [ ] i

31. The product of $5 - 2i$ and i is

1. 7
2. $2 + 5i$
3. $5 - 2i$
4. $-2 + 5i$