

NAME _____

DATE _____

PERIOD _____

LT 4.1 Honors Skills Practice #2

Complex Numbers

Solve each equation.

1. $5n^2 + 35 = 0$

2. $2m^2 + 10 = 0$

3. $4m^2 + 76 = 0$

4. $-2m^2 - 6 = 0$

5. $-5m^2 - 65 = 0$

6. $\frac{3}{4}x^2 + 12 = 0$

Find the values of l and m that make each equation true.

7. $15 - 28i = 3l + (4m)i$

8. $(6 - l) + (3m)i = -12 + 27i$

9. $(3l + 4) + (3 - m)i = 16 - 3i$

10. $(7 + m) + (4l - 10)i = 3 - 6i$

11. **ELECTRICITY** The impedance in one part of a series circuit is $1 + 3j$ ohms and the impedance in another part of the circuit is $7 - 5j$ ohms. Add these complex numbers to find the total impedance in the circuit.

$$(1 + 3j) + (7 - 5j) = 8 - 2j \text{ ohms}$$

13. **ELECTRICITY** Using the formula $E = IZ$, find the voltage E in a circuit when the current I is $3 - j$ amps and the impedance Z is $3 + 2j$ ohms.

$$E = (3 - j)(3 + 2j) = 9 + 6j - 3j - 2j^2 = 9 + 3j + 2$$

$$E = 11 + 3j \text{ volts}$$

① $5n^2 = -35$
 $n^2 = -7$
 $n = \sqrt{-7}$
 $n = \pm i\sqrt{7}$

② $2m^2 = -10$
 $m^2 = -5$
 $m = \sqrt{-5}$
 $m = \pm i\sqrt{5}$

③ $4m^2 = -76$
 $m^2 = -19$
 $m = \sqrt{-19}$
 $m = \pm i\sqrt{19}$

④ $-2m^2 = 6$
 $m^2 = -3$
 $m = \sqrt{-3}$
 $m = \pm i\sqrt{3}$

⑤ $-5m^2 = 6$
 $m^2 = -\frac{6}{5}$
 $m = \sqrt{-\frac{6}{5}}$
 $m = \pm i\sqrt{\frac{6}{5}}$

⑥ $\frac{3}{4}x^2 = -12$
 $x^2 = -16$
 $x = \sqrt{-16}$
 $x = \pm 4i$

⑦ $15 = 3l$ $-28 = 4m$
 $5 = l$ $-7 = m$

⑧ $6 - l = -12$ $3m = 27$
 $-l = -18$ $m = 9$
 $l = 18$

⑨ $3l + 4 = 16$ $3 - m = -3$
 $3l = 12$ $-m = -6$
 $l = 4$ $m = 6$

⑩ $7 + m = 3$ $4l - 10 = -6$
 $m = -4$ $4l = 4$
 $l = 1$