

2.3 Operations in the Number Systems

Determine if the sum is rational or irrational.

1) $\frac{56}{7} + \sqrt{45}$

2) $\sqrt{576} + \frac{32}{2}$

3) $\frac{1}{2} - 6$

4) $\pi - 9$

Determine if the product is rational or irrational.

5) $\sqrt{83} \cdot \frac{32}{2}$

6) $\frac{61}{4} \cdot \sqrt{90}$

7) $\sqrt{5} \cdot \sqrt{5}$

8) $\sqrt{5} \cdot \sqrt{20}$

Add or subtract the complex numbers.

9) $(-3 - 5i) + (12 - 3i)$

10) $(3 + 12i) + (-11 + i)$

11) $(6 + 4i) + (-1 + i)$

12) $(4 + 6i) - (1 + i)$

13) $(2 - 8i) - (7 - 8i)$

14) $(-10 + 12i) - (-1 + 5i)$

Multiply the following complex numbers.

15) $(3 - 2i)(4 - 2i)$

16) $(3 - 6i)(-8 + 5i)$

17) $(-1 + i)(-6 - 2i)$

18) $(7 - 7i)(8 - 6i)$

19) $(3 - 8i)^2$

20) $(-3 + 7i)^2$

Simplify:

21) $2(2 - 3i) + 4(1 - i)$

22) $-(4 - 9i) - 2(3 + 2i)$

23) $-4(2 + i) + 5(1 - 2i)$