Complex Numbers Pre-Test

Rectangular Form $z = a + bi$

Evaluate the following

1. $(3 + 4i) + (5 - 2i)$
2. $(-1 + i) + (2 + 3i)$
3. $(6 - 3i) - (2 + 5i)$
4. $(-4 + i) - (-1 - 2i)$
5. $3 \cdot (2 + 4i)$
6. $-2 \cdot (1 - 3i)$
7. $3i \cdot 2i$
8. $5i \cdot 4i$
9. $(1 + 2i) \cdot (3 + 4i)$
10. $(-2 + 3i) \cdot (1 - 5i)$
11. $(4 + 3i) \cdot (4 - 3i)$
12. $(2 + 5i) \cdot (2 - 5i)$
13. $\frac{4+2i}{2-3i}$
14. $\frac{-1+4i}{3+i}$
15. Find the magnitude $|3 + 4i|$
16. Find the magnitude $| - 2 - \sqrt{2}i|$
17. Find the argument of $(1 + \sqrt{3}i)$
18. Find the argument of $(-1 - i)$
19. Find all roots of $x^2 + x + 1 = 0$
20. Find all roots of $x^3 + 1 = 0$

Polar Form $z = re^{i\theta}$

Evaluate the following

19. $(2e^{i\pi/4}) \cdot (3e^{i\pi/3})$
20. $(4e^{i\pi/6}) \cdot (2e^{i\pi/2})$
21. $(2e^{i\pi/4})^3$
22. $(3e^{i\pi/3})^4$
23. Find the 3rd roots of$8e^{i\pi}$
24. Find the 4th roots of$(2 + i)$
25. $\log(-4)$
26. $\log(-16)$
27. i^{23}
28. i^{45}
29. -1^i
30. i^i