Practice Worksheet: Complex Numbers

1. Express the complex number $z = 10e^{i \cdot \frac{11\pi}{6}}$ in the form $z = a + bi$.

2. Express the complex number $z = 8e^{i \cdot \frac{2\pi}{3}}$ in the form $z = a + bi$.

3. Express the complex number $z = -7e^{i \cdot \frac{5\pi}{4}}$ in the form $z = a + bi$.

4. Express the complex number $z = 20e^{i \cdot \pi}$ in the form $z = a + bi$.

5. Find a polar form, $z = re^{i\theta}$, of the complex number $z = -3 - 3\sqrt{3}\,i$.

6. Find a polar form, $z = re^{i\theta}$, of the complex number $z = 2 - 2i$.

7. Find a polar form, $z = re^{i\theta}$, of the complex number $z = -4\sqrt{3} + 12i$.

8. Find a polar form, $z = re^{i\theta}$, of the complex number $z = -100$.

9. Find three different a polar forms, $z = re^{i\theta}$, of the complex number $z = 4i$. (HINT: $i = 0 + 4i$ can be associated with the point $(0, 4)$ so find three different angles that can be used to represent the "direction of this point" and use each angle to create a polar form.)