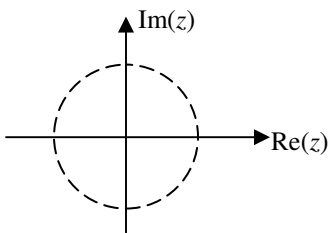
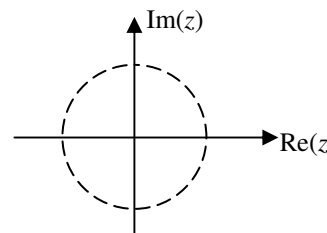


<p>1. Plot the sixth roots of -1 in the argand diagram below.</p> 	<p>2. Plot the cube roots of i and $-i$ in the argand diagram below.</p> 
<p>3. Show that $\sqrt[6]{-1} = \sqrt[3]{\pm i}$.</p>	<p>4. Solve $z^5 + 1 = 0$. Express the solutions in polar form.</p>
<p>5. Factorise $z^2 - i$.</p>	<p>6. Factorise $z^2 + i$.</p>
<p>7. Factorise $z^3 - (3+i)z^2 + z - 3 - i$.</p>	<p>8. Factorise $z^3 + 1$.</p>
<p>9. Factorise $z^4 - 16$.</p>	<p>10. Factorise $z^4 + 4$.</p>
<p>11. Factorise $z^6 - 64$.</p>	<p>Numerical, algebraic and worded answers.</p> <ol style="list-style-type: none"> 3. $(-1)^{1/6}$ $= ((-1)^{1/2})^{1/3}$ $= (\pm i)^{1/3}$ 4. $\text{cis}(\pi/5), \text{cis}(3\pi/5), \text{cis}(\pi)$, $\text{cis}(-\pi/5), \text{cis}(-3\pi/5)$ 5. $(z - 1/\sqrt{2} - 1/\sqrt{2}i)(z + 1/\sqrt{2} + 1/\sqrt{2}i)$ 6. $(z + 1/\sqrt{2} - 1/\sqrt{2}i)(z - 1/\sqrt{2} + 1/\sqrt{2}i)$ 7. $(z - i)(z + i)(z - 3 - i)$ 8. $(z + 1)(z - 1/2 - i\sqrt{3}/2)(z - 1/2 + i\sqrt{3}/2)$ 9. $(z - 2)(z + 2)(z - 2i)(z + 2i)$ 10. $(z - 1 - i)(z - 1 + i)(z + 1 - i)(z + 1 + i)$ 11. $(z - 2)(z + 2)(z + 1 - i\sqrt{3})(z + 1 + i\sqrt{3})(z + 1 + i\sqrt{3})(z - 1 - i\sqrt{3})(z - 1 + i\sqrt{3})$