1 MS-DI, semestr 1, 2021/2022, MATEMATYKA 1
Zestaw zadań do samodzielnej pracy
Na ocenę wyższą

1. Obliczyć:

   a) $(1+i)^{10} =$
   b) $(2+\sqrt{12}i)^5 =$
   c) $(1+\cos\frac{\pi}{3}+i\sin\frac{\pi}{3})^6 =$

   d) $\left(-\frac{1}{2}+\frac{\sqrt{3}}{2}i\right)^{12} =$
   e) $\left(\dfrac{\sqrt{3}-i}{2}\right)^{12} =$

2. Obliczyć:

   a) $\sqrt{-4} =$
   b) $\sqrt{-8i} =$
   c) $\sqrt{-3-4i} =$

   d) $\sqrt{8+6i} =$
   e) $\sqrt[4]{-4} =$
   f) $\sqrt[3]{i} =$
   g) $\sqrt[6]{-27} =$

Odpowiedzi

1. a) $32i$ b) $29(1 - \sqrt{3}i)$ c) -27
   d) 1 e) 1

2. **a)** $z_1 = 2i, z_2 = -2i$

   b) $z_1 = -2 + 2i, z_2 = 2 - 2i$

   c) $z_1 = 1 - 2i, z_2 = -1 + 2i$

   d) $z_1 = 3 + i, z_2 = -3 - i$

   e) $z_1 = 1 + i, z_2 = -1 + i, z_3 = -1 - i, z_4 = 1 - i$

   f) $z_1 = \frac{1}{2}(\sqrt{3} + i), z_2 = \frac{1}{2}(-\sqrt{3} + i), z_3 = -i$

   g) $z_1 = \frac{3}{2} + \frac{\sqrt{3}}{2}i, z_2 = i\sqrt{3}, z_3 = -\frac{3}{2} + \frac{\sqrt{3}}{2}i, z_4 = -\frac{3}{2} - \frac{\sqrt{3}}{2}i, z_5 = -i\sqrt{3}, z_6 = \frac{3}{2} - \frac{\sqrt{3}}{2}i$