1. For each complex number, find both the rectangular and polar forms.

(a) \(-2i\)  
(b) \(4e^{i\pi/6}\)  
(c) \(3 - 3i\)  
(d) \(e^{-i\pi/8}\)  
(e) \(-4\)  
(f) \(-\sqrt{3} - 3i\)  
(g) \((-1 + i)^9\)  
(h) \((3 - \sqrt{27}i)^{-4}\)

2. Use DeMoivre’s formula to derive a formula for \(\sin(4\theta)\) in terms of \(\sin(\theta)\) and \(\cos(\theta)\) only.

3. Find all complex solutions to the given equation. Write your answers in rectangular form.

(a) \(z^2 = -3i\)  
(b) \(z^4 + 3z^2 = 4\)  
(c) \(z^6 = -64\)  
(d) \(z^4 + 81 = 0\)  
(e) \(z^5 = 1 + i\)  
(f) \(e^{iz} = e^3\)