

31) $-\frac{\sqrt{2}}{2} + i\frac{\sqrt{2}}{2}$

32) $0 - 243i$

34) $-648 - 648i\sqrt{3}$

35) $-4 - 4i$

37) $-8 + 0i$

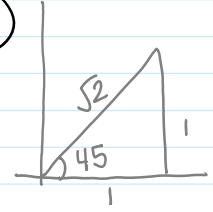
38) $-1 + 0i$

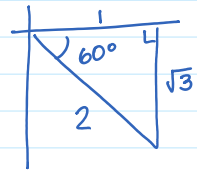
67) B

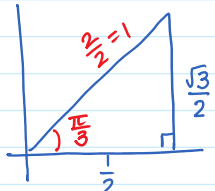
31) $1^3 (\cos \frac{3\pi}{4} + i \sin \frac{3\pi}{4}) = -\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}i$

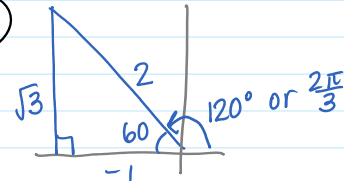
32) $3^5 (\cos \frac{15\pi}{2} + i \sin \frac{15\pi}{2}) = 243(0 + i(-1)) = -243i$
 \downarrow
 $\frac{15\pi}{2} - \frac{4\pi}{2} = \frac{11\pi}{2} - \frac{4\pi}{2} = \frac{7\pi}{2} - \frac{4\pi}{2} = \frac{3\pi}{2}$

34) $6^4 (\cos \frac{20\pi}{6} + i \sin \frac{20\pi}{6}) = 1296 (-\frac{1}{2} + i(-\frac{\sqrt{3}}{2})) = -648 - 648i\sqrt{3}$
 \uparrow
 $\frac{20\pi}{6} = \frac{10\pi}{3} - \frac{6\pi}{3} = \frac{4\pi}{3}$

35)  $[\sqrt{2} (\cos 45^\circ + i \sin 45^\circ)]^5 = (\sqrt{2})^5 [\cos 225^\circ + i \sin 225^\circ]$
 $\frac{\sqrt{2} \cdot \sqrt{2} \cdot \sqrt{2} \cdot \sqrt{2} \cdot \sqrt{2}}{2 \cdot 2 \cdot \sqrt{2}} \quad 4\sqrt{2} (-\frac{\sqrt{2}}{2} + i(-\frac{\sqrt{2}}{2}))$
 $-\frac{4 \cdot 2}{2} - \frac{4 \cdot 2}{2}i = -4 - 4i$

37)  $[2 (\cos \frac{5\pi}{3} + i \sin \frac{5\pi}{3})]^3 = 2^3 (\cos 5\pi + i \sin 5\pi) = 8(-1 + i(0)) = -8 + 0i$

38)  $[1 (\cos \frac{\pi}{3} + i \sin \frac{\pi}{3})]^3 = 1^3 (\cos \pi + i \sin \pi) = -1 + 0i$

67)  $2 (\cos \frac{2\pi}{3} + i \sin \frac{2\pi}{3})$ (B)