

Math 417 – Sections 42 & 43 Solutions

2. (a) $\int_i^{i/2} e^{\pi z} dz = \left[\frac{1}{\pi} e^{\pi z} \right]_i^{i/2} = \frac{1}{\pi} [e^{i\pi/2} - e^{i\pi}] = \frac{1}{\pi}(i + 1)$
- (b) $\int_0^{\pi+2i} \cos\left(\frac{z}{2}\right) dz = \left[2 \sin\left(\frac{z}{2}\right) \right]_0^{\pi+2i} = 2 \left[\sin\left(\frac{\pi}{2} + i\right) - \sin(0) \right] = 2 \cos i = e + e^{-1}$
- (c) $\int_1^3 (z-2)^3 dz = \left[\frac{1}{4} (z-2)^4 \right]_1^3 = \frac{1}{4} [(3-2)^4 - (1-2)^4] = 0$