

Dr. Z.'s Intro to Complex Variables Homework assignment 12

1. Evaluate the following integrals.

**a**  $\int_{|z|=1} \frac{z}{(z-3)^2} dz$

**b**  $\int_{|z|=3} \frac{z^3}{(z-1)} dz$

**c**  $\int_{|z|=3} \frac{z^3}{(z-5)} dz$

**d**  $\int_{|z|=1} \frac{\cos z}{z-\frac{1}{2}} dz$

**e**  $\int_{|z|=10} \frac{e^z}{z-i} dz$

2. Evaluate the following real integrals

**a**  $\int_0^{2\pi} \frac{d\theta}{4+\cos\theta} d\theta$

**b**  $\int_0^{2\pi} \frac{d\theta}{3+\sin\theta+\cos\theta} d\theta$

**c**  $\int_0^\pi \frac{d\theta}{1+\sin^2\theta} d\theta$