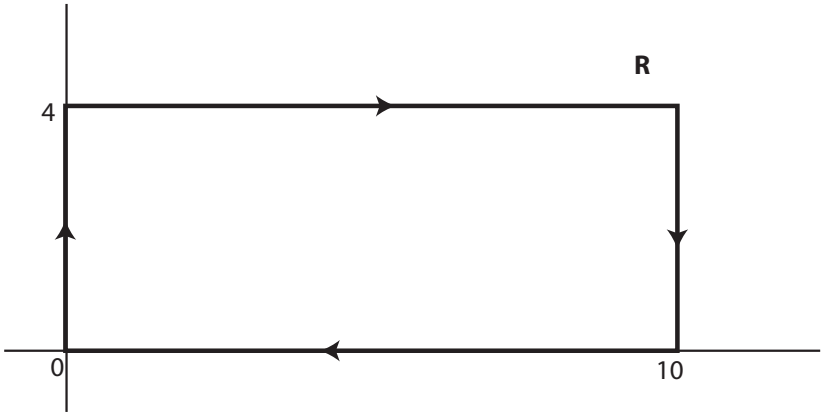
1. Use the Residue Formula to show:
$$\int_{-\infty}^{\infty} \frac{1}{x^6+1}\,dx = \frac{2}{3}\pi$$

2. Let R be the rectangle oriented clockwise shown below. Find the integrals:

(a) $\int_R \frac{1}{z^2-3z+5}\,dz$ (b) $\int_R \frac{1}{z^2+z+1}\,dz$ (c) $\int_R \frac{1}{z^2-z+1}\,dz$



3. Book problem #6

4. Find the number of zeroes of:

   (a) $3e^z - z$ in the closed disc $|z| \le 1$

   (b) $\frac{1}{3}e^z - z$ in the closed disc $|z| \le 1$

   (c) $z^4 - 5z + 1$ in the closed anulus $1 \le |z| \le 2$

   (d) $z^6 - 5z^4 + 3z^2 - 1$ in the closed disc $|z| \le 1$