3. *Given the following information, calculate the rate of return for this portfolio for January, February, March, and the first quarter of 2000, using a true time-weighted rate of return:*

Date	Market Value (€)	Cash Flow (€)	Market Value Post Cash Flow (€)
12/31/99	500,000		
1/31/00	509,000		
2/19/00	513,000	+50,000	563,000
2/28/00	575,000		
3/12/00	585,000	–20,000	565,000
3/31/00	570,000		

Solution:

January

$$R = \frac{(509{,}000 - 500{,}000)}{500{,}000} = 1.80\%$$

February

$$1/31/00 - 2/19/00 \quad R = \frac{(513{,}000 - 509{,}000)}{509{,}000} = 0.79\%$$

$$2/19/00 - 2/28/00 \quad R = \frac{(575{,}000 - 563{,}000)}{563{,}000} = 2.13\%$$

$$1/31/00\text{-}2/28/00 \quad R_{FEB} = \left((1 + 0.008) \times (1 + 0.021)\right) - 1 = 2.92\%$$

March

$$2/28/00 - 3/12/00 \quad R = \frac{(585{,}000 - 575{,}000)}{575{,}000} = 1.74\%$$

$$3/12/00 - 3/31/00 \quad R = \frac{(570{,}000 - 565{,}000)}{565{,}000} = 0.88\%$$

$$2/28/00\text{-}3/31/00 \quad R_{Mar} = \left((1 + 0.017) \times (1 + 0.009)\right) - 1 = 2.62\%$$

Quarter 1

$$R_{QT1} = \left((1 + 0.018) \times (1 + 0.029) \times (1 + 0.026)\right) - 1 = 7.48\%$$