

Q10.2) \$1000 6% p.a

i)  $1000(1.06) - 72$

$$B_1 = \$988$$

ii)  $B_2 = [1000(1.06) - 72] \cdot 1.06 - 72$

$$1000(1.06)^2 - 72(1.06) - 72$$

$$1000(1.06)^2 - 72(1+1.06)$$

$$B_n = 1000(1.06)^n - 72(1 + 1.06 + \dots + 1.06^{n-1})$$

$$= 1000(1.06)^n - 72 \frac{(1.06^n - 1)}{0.06}$$

$$= 1000(1.06)^n - 72 \frac{(1.06^n - 1)}{0.06}$$

$$= 1000(1.06)^n - 1200(1.06^n - 1)$$

$$= 1000(1.06)^n - 1200 \cdot (1.06)^n + 1200$$

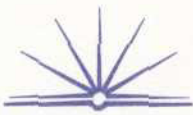
$$B_n = 1200 - 200 \times (1.06)^n$$

iii)  $B_{10} = \frac{1000(1.06)^{10} - 72(1.06^{10} - 1)}{0.06}$

$$B_{10} = \uparrow \$90$$

$$1000(1.06)^n = 90(1.06^n - 1)$$

$$1000(1.06)^n = 1500 \frac{(1.06^n - 1)}{0.06} \rightarrow$$



$$1500 - 500 \times (1.06)^n = 0$$

$$1500 = 500(1.06)^n$$

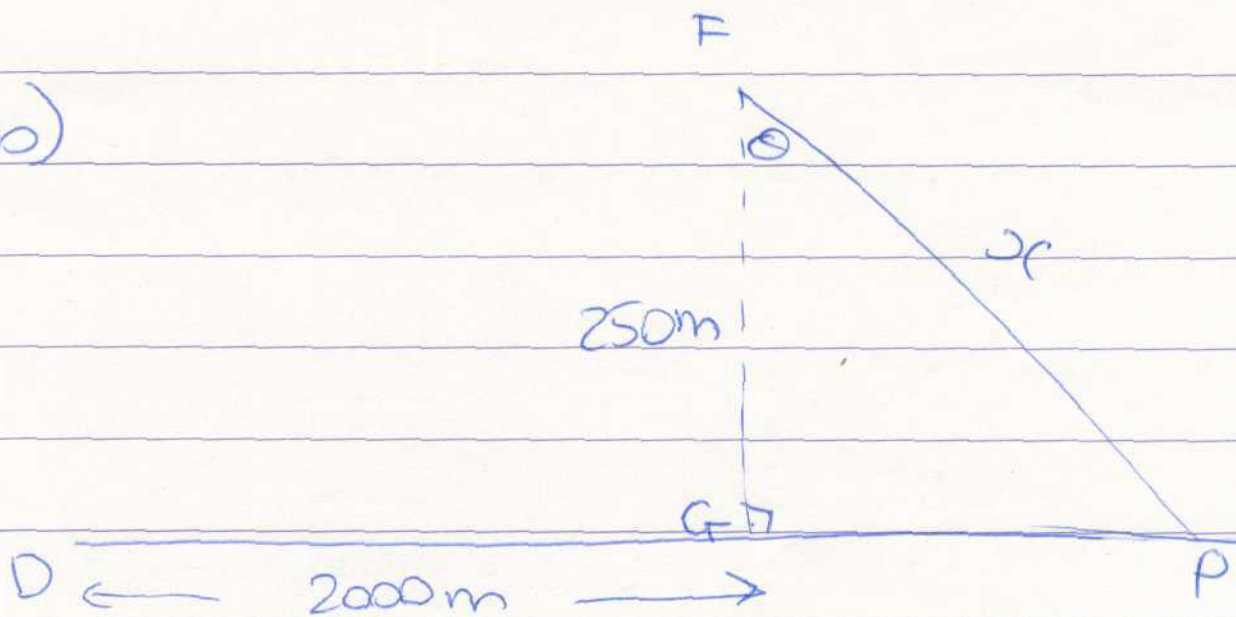
$$1500 = 1.06^n$$

$$\frac{1500}{500} = 1.06^n$$

$$3^n = 1.06^n$$

$n = 2.8$  more years

b)



~~sin 40~~  $\sin \theta =$