

# PURE 21 EXPONENTIAL FUNCTIONS SOLUTIONS

## Section 1

1)  $180^\circ, 270^\circ, 90^\circ$

2)  $120^\circ, 180^\circ, 240^\circ$

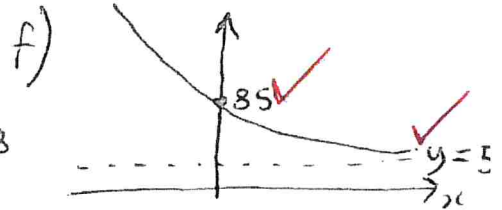
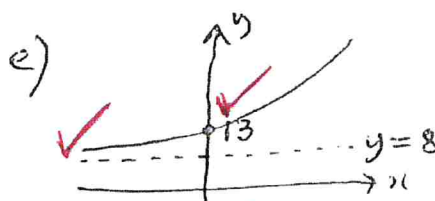
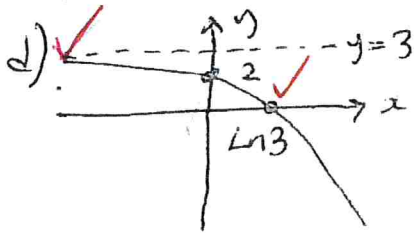
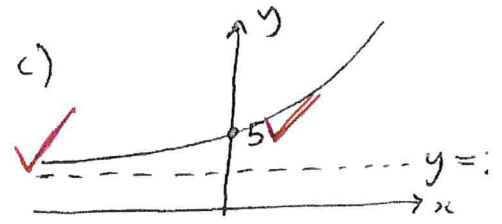
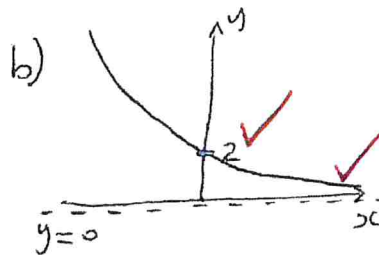
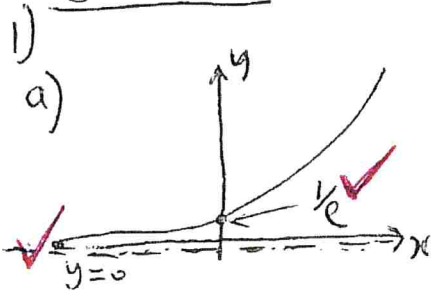
3) RED:  $\sin x$

BLUE:  $\sin(x+45^\circ)$

PURPLE:  $35 \sin(2x)$

4) a)  $30x^{10}$  b)  $\frac{2}{3}x^{-3}$  c)  $2x^{-3}$  d)  $5x^{3/2}$  e)  $3x^{4/2}$  f)  $\frac{1}{4}x^{-2}$

## Section 2



2) a)  $y = 2^{x/2}$

b)  $y = 2^{-x/2}$

c)  $y = 2^{2x}$

3) a)  $N = 1000 + 500e^{0.5} = 1500$

b) Rate of Increase is 500 extra rabbits in 1st 1.4 years etc..

c)  $N = 1000 + 500e^{0.5 \times 2} = 1000 + 1359 = 2359$

d)  $\frac{dN}{dt} = 250e^{0.5T} \Big|_{T=1} = 250e^{0.5} = 412$

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## Section 3

1)  $2 = (1.02)^n \Rightarrow n = \frac{\log 2}{\log 1.02} \approx 35 \text{ years}$  To Nearest year

2)  $2 = (1.06)^n \Rightarrow n = \frac{\log 2}{\log 1.06} \approx 12 \text{ years}$  To Nearest year

3) ORIGINAL Air =  $500 \times 0.88^B$  (B = Number of Breaths)  
 $B = 24 \Rightarrow \text{Air} = 500 \times 0.88^{24} = 23.3 \text{ mL}$