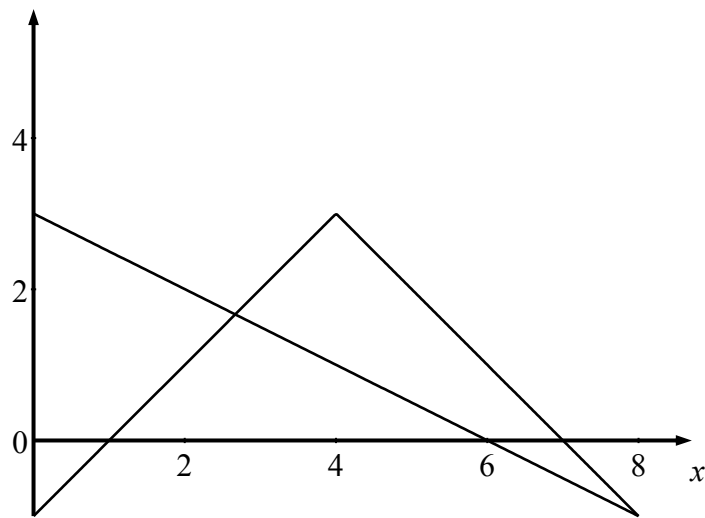


P3 responses

1



(i) $x > 4, y = 3 + (4-x) = 3 - x/2 \quad x = 8$

$x < 4, y = 3 - (4-x) = 3 - x/2 \quad x = 8/3$

(ii) The line $y = 3 - x/2$ will cut the graph of $y = 3 - |4-x|$ twice when $-1 < k < 0$

2 My science colleagues seem to prefer \log_{10} - perhaps like me they were trained in common logs.

$$3 \quad \dot{N} = -\frac{(a + be^{\lambda t})ke^{kt} - e^{kt}\lambda e^{\lambda t}}{(a + be^{\lambda t})^2} = -\frac{e^{kt}(a + (bk - \lambda)e^{\lambda t})}{(a + be^{\lambda t})^2}$$

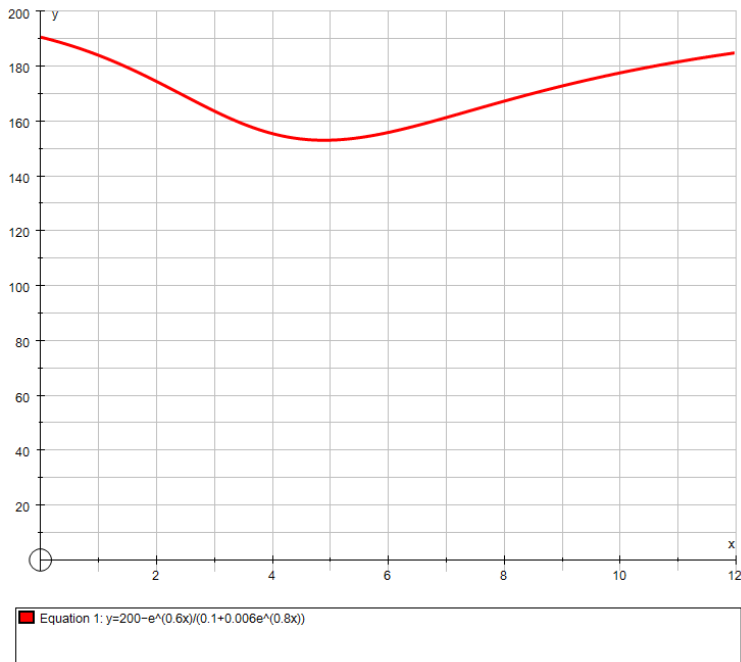
$$\dot{N} = 0 \Rightarrow a + (bk - \lambda)e^{\lambda t} = 0 \Rightarrow e^{\lambda t} = \frac{a}{\lambda - bk}$$

So $\lambda > bk$

The exam question June 17 can be rewritten as $y = 200 - e^{(0.6x)/(0.1 + 0.006e^{(0.8x)})}$

for plotting and is shown below.

IAL Activity 4 responses



4 (a) $\int \frac{\cos x - \sin x}{\cos x + \sin x} dx = \ln(\cos x + \sin x) + c$ (b) $\int \sec x \tan x dx = \sec x + c$

(c) 'Obviously' 0 (d) $(\ln(1 + x^2))^2 + c$

5 Solution and allocation of marks are available in the specimen papers.