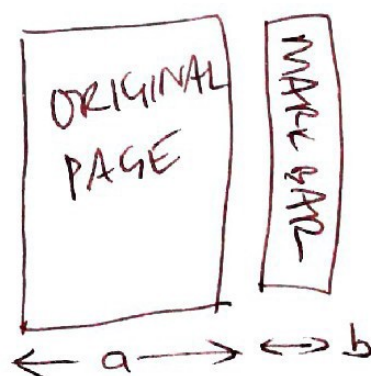


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 A1 (a) This is an answer to a question on how to add marking boxes to a pdf. They should appear somewhere over there →

(b) But actually, if we drew a diagram, we might see this.



I forgot something so I'll put it in here using the pdf editor

Something extra entered by hand using a very old intuitive tablet

(c) The maths for the width is trivial

$$w = a + b.$$

OR:

$$\int_0^{a+b} dx = a+b$$

which is what we expect.

| Sub-total | Mark | Check |
|-----------|-----------------|--------------|
| 1 | | |
| 2 | | |
| 3 | 18 | |
| 4 | section Q 19 | section Q |
| 5 | number 20 | number |
| 6 | mark awarded 21 | mark awarded |
| 7 | | |
| 8 | section Q 22 | section Q |
| 9 | number 23 | number |
| 10 | mark awarded 24 | mark awarded |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | 25 | |
| 17 | Mark | Check |

7 1 2 3 4 5 6

A2 (a) We start with an exponential

$$e^{-\alpha x} = A(x)$$

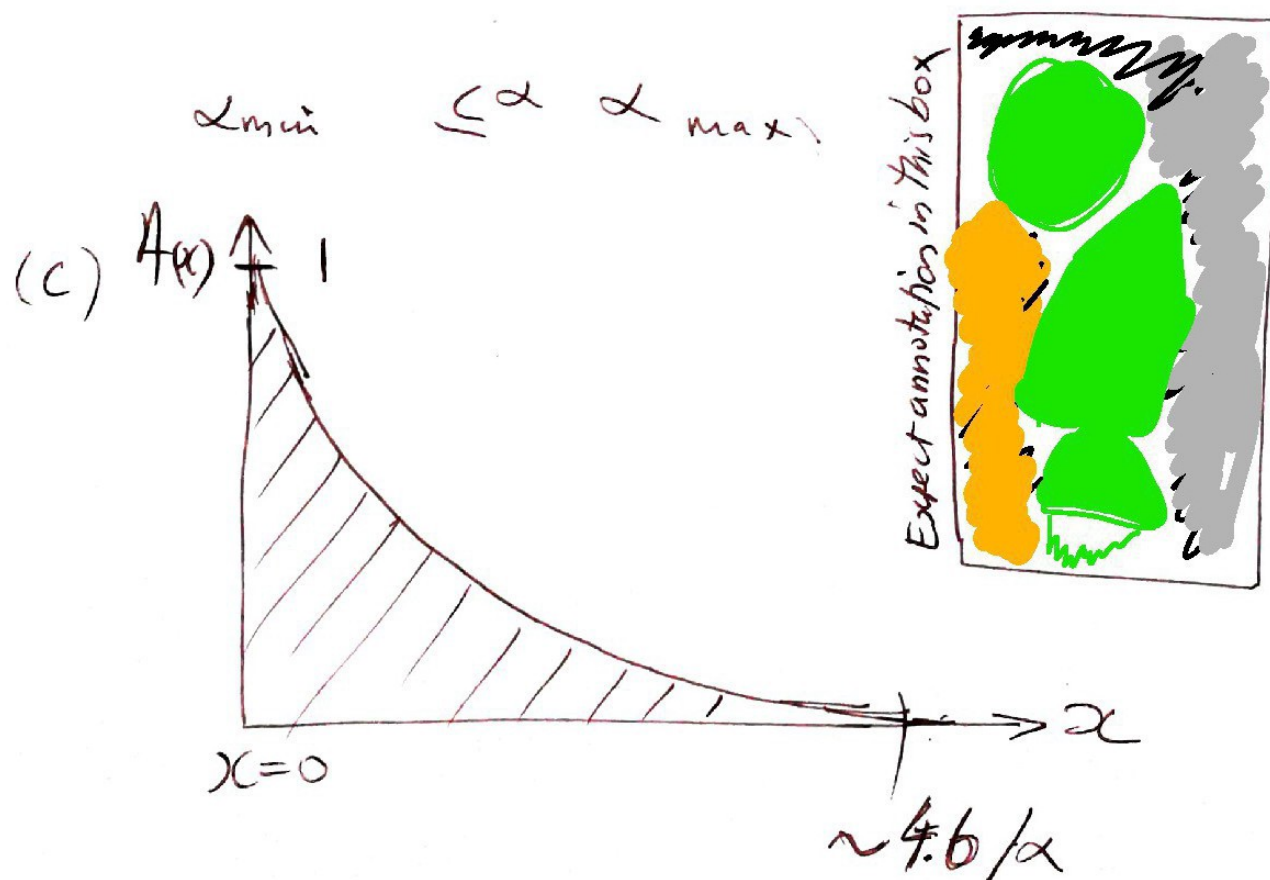
Then make up some conditions to

complete the specification, such as

$$\alpha \leq \alpha_{\max}, \text{ and}$$

$\alpha \geq \alpha_{min}$

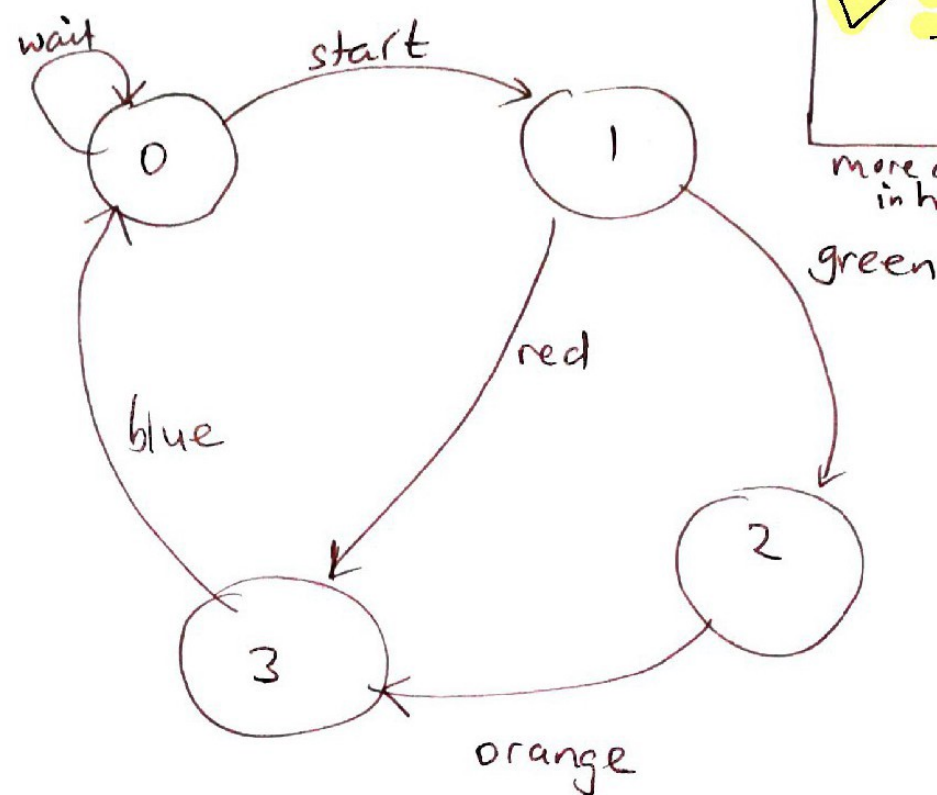
(b) Again, not rocket science that



The diagram illustrates two parallel processes: 'Mark' (red) and 'Check' (blue). On the left, a vertical 'Sub-total' column contains boxes with the numbers 26, 27, 28, and 5. The 'Mark' process starts with a red box labeled 'Mark' at the top. An arrow points down to a red box containing a red flag icon with 'x x' and a sad face. Below this is a red box with fields for 'section' (with a 'Q' icon), 'number', and 'mark awarded'. An arrow points down to another identical red box. Finally, an arrow points down to a red box with a checkmark icon and a 'Mark' label. The 'Check' process starts with a blue box labeled 'Check' at the top. An arrow points down to a blue box containing a blue flag icon with '?!' and a sad face. Below this is a blue box with fields for 'section' (with a 'Q' icon), 'number', and 'mark awarded'. An arrow points down to another identical blue box. Finally, an arrow points down to a blue box with a checkmark icon and a 'Check' label.

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(9)



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$$V = \frac{W}{2}$$

more annotation
in here

green

"The coloured states are numbered starting at zero" makes no sense because the edges have colour names, and these represent transitions.

$$(b) \quad \overline{A+B} = \overline{A} \cdot \overline{B}$$

$$A = A(B + \overline{B})$$


I'll edit/annotate in this box electronically

$$\oint V dv = 0$$

kind of makes it
a bit simpler.

because I forgot something, oops.

because I forgot something opps.

(c)  $\oint_V \Psi_v dv = \int_0^h \int_0^d \int_0^w \Psi(x,y,z) dx dy dz$

The diagram illustrates two parallel processes: 'Mark' (red) and 'Check' (blue). On the far left is a vertical column of 15 empty boxes labeled 'Sub-total'. The 'Mark' process starts with a 'Mark' header, leading to a red box with a sad face icon and a small empty box. This leads to a red form with fields for 'section' (a small box), 'Q number' (a large box), and 'mark awarded' (a box). This form leads to another identical red form. Finally, it leads to a red box with a checkmark icon and a small empty box, labeled 'Mark'. The 'Check' process starts with a 'Check' header, leading to a blue box with a question mark icon and a small empty box. This leads to a blue form with fields for 'section' (a small box), 'Q number' (a large box), and 'mark awarded' (a box). This form leads to another identical blue form. Finally, it leads to a blue box with a checkmark icon and a small empty box, labeled 'Check'.

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(b) "A photon can circle the world in the same time it takes to drop your coffee" —
— this statement is nearly true

(9) photons travel in straight lines

(b) no-one had enough funding to make a whole-world sized transformation option yet

(c) some people drop coffee from a greater height than others.

(d) if we assume linear photo travel of circumference of earth, and

$$z_{\text{offee}} - z_{\text{desk}} = 65 \text{ cm}$$

Then we're getting close

$$d = vt \quad v = at \quad \text{then}$$

$$\int d = \frac{1}{2} at^2$$

$$\sqrt{\frac{2ad}{g}} = t$$

$$24 \text{ ~~mm~~} = 40,075 \text{ mm} = 40 \text{ mm}$$

$$d = \left(\frac{2\pi D_w}{c} \right)^{2/3} \lambda = 65 \text{ nm}$$

Mmm..... You must be standing up for this to be true!

The diagram illustrates two parallel processes: 'Mark' (red) and 'Check' (blue). On the left, a vertical column of boxes is labeled 'Sub-total' at the top. The 14th box from the top contains the number '6'. The 'Mark' process starts with a red box labeled 'Mark' at the top. An arrow points down to a red box containing a red icon with two 'x's and a sad face, and a small empty box below it. Another arrow points down to a red box labeled 'section' at the top, containing a large 'Q' icon, a small empty box, and the text 'number' below it. Below this is a large empty box, followed by a box labeled 'mark awarded' and another large empty box. An arrow points down to a second identical red box. Finally, an arrow points down to a red box containing a red checkmark icon and a small empty box, with the word 'Mark' at the bottom. The 'Check' process starts with a blue box labeled 'Check' at the top. An arrow points down to a blue box containing a blue icon with a question mark and exclamation mark, and a small empty box below it. Another arrow points down to a blue box labeled 'section' at the top, containing a large 'Q' icon, a small empty box, and the text 'number' below it. Below this is a large empty box, followed by a box labeled 'mark awarded' and another large empty box. An arrow points down to a second identical blue box. Finally, an arrow points down to a blue box containing a blue checkmark icon and a small empty box, with the word 'Check' at the bottom.