Indices

In this question you should show all stages of your working.

Solutions relying on calculator technology are not acceptable.

Given

$$\frac{16^{x-5}}{2^{y+4}} = 64$$

express y in terms of x, writing your answer in simplest form.

(3 marks)

$16 = 2^4$ and $64 = 2^6$, so $\frac{16^{x-5}}{2^{y+4}} = 64$ can be written as $\frac{2^{4(x-5)}}{2^{y+4}} = 2^6$

So:

$$\frac{2^{4(x-5)}}{2^{y+4}} = \frac{2^{4x-20}}{2^{y+4}} \Rightarrow \frac{2^{4x-20}}{2^{y+4}} = 2^6$$

1 mark

From the laws of indices:

$$4x - 20 - (y + 4) = 6$$
$$4x - 20 - y - 4 = 6$$

1 mark

$$y = 4x - 30$$

1 mark