

INKMATHS FLASHCARDS

Spot the error

6 cards · fronts and backs

Print double-sided, flipping on the long edge, and each answer lands behind its question. Cut along the card borders.

Definitions in precise wording, the standard results the formulae booklet does not print, a check-yourself question per topic, and the slips that lose marks. The same cards run on the website with spaced-repetition scheduling, at inkphysics.co.uk/maths/flashcards.

SPOT THE ERROR

Say what is wrong with this claim:

$\sqrt{(a^2 + b^2)}$ simplifies to $a + b$.

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Say what is wrong with this claim:

$(x + 3)^2 = x^2 + 9$.

SPOT THE ERROR

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Say what is wrong with this claim:

In $(x^2 + 5x)/x^2$, the x^2 terms cancel to leave $1 + 5x$.

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Say what is wrong with this claim:

If $\sin x = 0.5$ then $x = 30^\circ$ is the complete answer.

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Say what is wrong with this claim:

Dividing both sides of $x^2 = 4x$ by x gives $x = 4$, done.

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Say what is wrong with this claim:

$\ln(a)/\ln(b)$ simplifies to $\ln(a/b)$.

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Squaring a sum needs the cross term. $(x + 3)^2 = x^2 + 6x + 9$, and the slip drops $2 \times x \times 3$. Write the bracket out twice and multiply term by term. The middle term then becomes impossible to lose.

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Square roots do not distribute over addition. Try $a = 3$, $b = 4$: the left side is 5, the right side is 7. A product does come apart, but as $\sqrt{(a^2b^2)} = |ab|$: with $a = 1$, $b = -1$ the root is 1 and not -1.

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Sine repeats. In 0° to 360° alone both $x = 30^\circ$ and $x = 150^\circ$ work, and full turns can be added to either. Read the interval the question gives, then use the sine curve or CAST to collect every solution inside it. One answer where four are wanted is a three-mark loss.

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Only common factors of the whole numerator and denominator cancel. Factorise first: $x(x + 5)/x^2 = (x + 5)/x$, which is $1 + 5/x$. Cancelling terms that are added, rather than factors that are multiplied, is the single most common algebra slip.

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The quotient law wants a difference of logs, not a quotient of them. $\ln a - \ln b = \ln(a/b)$. What $\ln(a)/\ln(b)$ actually equals is log base b of a , the change-of-base form, and it goes no further.

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Dividing by x silently assumes $x \neq 0$ and throws away the solution $x = 0$. Move everything to one side and factorise: $x(x - 4) = 0$, so $x = 0$ or $x = 4$.

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