INKMATHS FLASHCARDS

Coordinate geometry and vectors

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.

STANDARD RESULT

Perpendicular gradient ($m \neq 0$):

a line of gradient m: perpendicular gradient = ?

COORDINATE GEOMETRY AND VECTORS

STANDARD RESULT

Circle from the expanded form:

$x^2 + y^2 + 2gx + 2fy + c = 0$: centre? radius?

COORDINATE GEOMETRY AND VECTORS

RECALL

State the three circle facts a coordinate question leans on.

COORDINATE GEOMETRY AND VECTORS

RECALL

State how to turn parametric equations into a cartesian one.

COORDINATE GEOMETRY AND VECTORS

STANDARD RESULT

Magnitude and unit vector:

$a = xi + yj + zk$: $|a| = ?$, unit vector = ?

COORDINATE GEOMETRY AND VECTORS

SPOT THE ERROR

Say what is wrong with this claim:

If A and B have position vectors a and b, the vector from A to B is a + b.

COORDINATE GEOMETRY AND VECTORS

STANDARD RESULT

$(-g, -f), \sqrt{(g^2 + f^2 - c)}$

COORDINATE GEOMETRY AND VECTORS

STANDARD RESULT

$-(1)/(m)$, because $m_1m_2 = -1$. A horizontal line's perpendicular is vertical, with no gradient

COORDINATE GEOMETRY AND VECTORS

RECALL

Make the parameter the subject of whichever equation is easier and substitute it into the other. With trig parameters use $\cos^2t + \sin^2t = 1$ instead of solving for t. Then say what range of x and y the parameter allows, because the cartesian equation on its own describes more curve than you have.

COORDINATE GEOMETRY AND VECTORS

RECALL

The angle in a semicircle is a right angle. The perpendicular from the centre bisects a chord. A tangent meets the radius at the point of contact at a right angle. Almost every circle question is one of these three plus the distance formula.

COORDINATE GEOMETRY AND VECTORS

SPOT THE ERROR

It is b - a. Travel back down a to the origin, then out along b. Adding the two position vectors gives you the diagonal of a parallelogram, which is a different point entirely, and the midpoint of AB is $\frac{1}{2}(a + b)$ rather than a + b.

COORDINATE GEOMETRY AND VECTORS

STANDARD RESULT

$\sqrt{(x^2 + y^2 + z^2)}$, $(a)/(|a|)$

COORDINATE GEOMETRY AND VECTORS