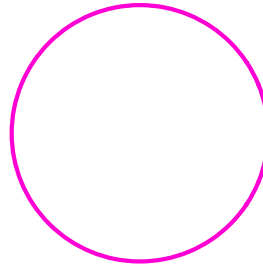
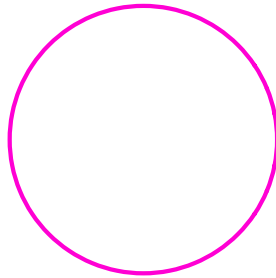


$$P(A \cup B)$$

$$= P(A) + P(B)$$

$$- P(A \cap B)$$



A, B
independent if

$$\underline{P(A \cap B) = P(A) \times P(B)}$$

Simplify fully $\frac{2x^2 + 9x - 5}{6x^2 - 5x + 1}$

$$\frac{(\cancel{2x-1})(x+5)}{(3x-1)(\cancel{2x-1})}$$

$$\frac{x+5}{3x-1}$$

$$2x-5 = -10$$

$$-1 + 10$$

$$2x^2 + 10x - x - 5$$

$$2x(x+5) - 1(x+5)$$

$$(2x-1)(x+5)$$

$$6x-1 = 6$$

$$-3 - 2$$

$$6x^2 - 3x - 2x + 1$$

$$3x(2x-1) - 1(2x-1)$$

$$(3x-1)(2x-1)$$

18.

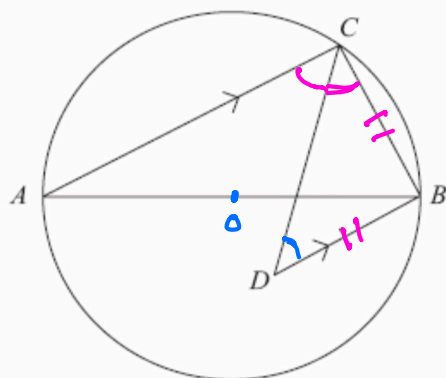


Diagram NOT
accurately drawn

AB is a diameter of a circle.

C is a point on the circle.

D is the point inside the circle such that $BD = BC$ and BD is parallel to CA .

Find the size of angle CDB .

You must give reasons for your answer.

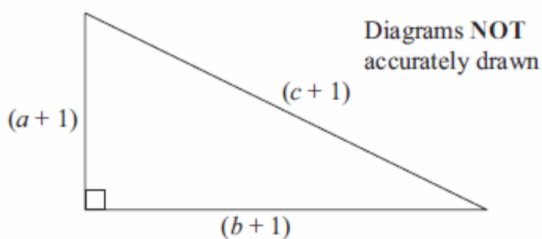
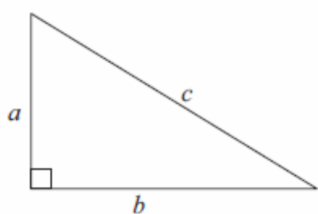
21. Umar thinks $(a+1)^2 = a^2 + 1$ for all values of a .

(a) Show that Umar is wrong.

(2)

Here are two right-angled triangles.

All the measurements are in centimetres.



Diagrams NOT
accurately drawn

(b) Show that $2a + 2b + 1 = 2c$

$$\underline{a^2 + b^2 = c^2}$$

$$(a+1)^2 + (b+1)^2 = (c+1)^2$$

$$a^2 + 2a + 1 + b^2 + 2b + 1 = c^2 + 2c + 1$$

$$a^2 + b^2 + 2a + 2b + 2 = c^2 + 2c + 1$$

$$\cancel{c^2} + 2a + 2b + 1 = \cancel{c^2} + 2c$$

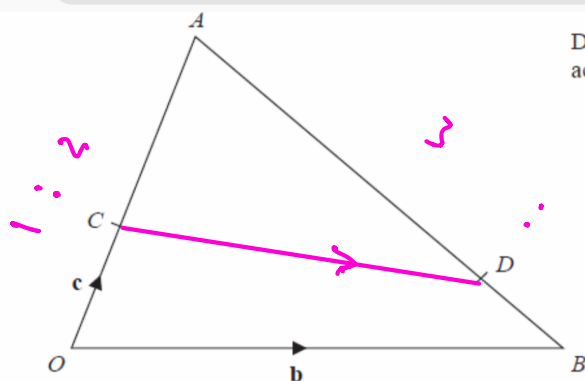


Diagram NOT
accurately drawn

$$\begin{aligned}\vec{AB} &= \vec{AO} + \vec{OB} \\ &= -3\vec{c} + \vec{b}\end{aligned}$$

In the diagram,

$$\vec{OB} = \mathbf{b}$$

$$\vec{OC} = \mathbf{c}$$

$$\vec{OC} = \frac{1}{3} \vec{OA}$$

$$\vec{BD} = \frac{1}{4} \vec{BA}$$

Find CD in terms of \mathbf{b} and \mathbf{c} .

Give your answer in its simplest form.

You must show all your working.

$$\vec{CD} = \vec{CA} + \vec{AD}$$

$$= 2\vec{c} + \frac{3}{4} \vec{AB}$$

$$= 2\vec{c} + \frac{3}{4}(-3\vec{c} + \vec{b})$$

$$= 2\vec{c} - \frac{9}{4}\vec{c} + \frac{3}{4}\vec{b}$$

$$= -\frac{1}{4}\vec{c} + \frac{3}{4}\vec{b}$$