

EUCLIDEAN GEOMETRY

26 AUGUST 2013

Lesson Description

In this lesson, we:

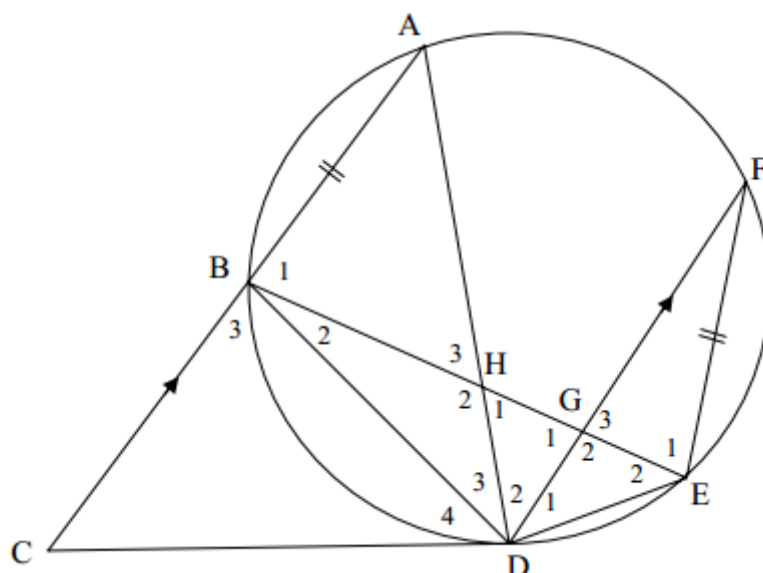
- Look at typical exam questions relating to Euclidean Geometry.

Questions

Question 1

(Adapted from DBE, Nov 2011 Paper 3, Question 10)

D is a tangent to circle ABDEF at D. Chord AB is produced to C. Chord BE cuts chord AD in H and chord FD in G. $AC \parallel FD$ and $FE = AB$. Let $\hat{D}_4 = x$ and $\hat{D}_1 = y$.

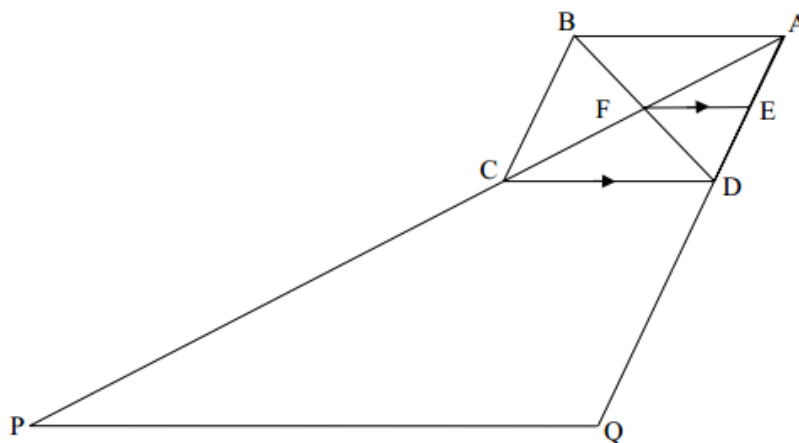


- | | |
|---|-----|
| a.) Determine THREE other angles that are each equal to x . | (6) |
| b.) Prove that $\triangle BHD \parallel \triangle FED$. | (5) |
| c.) Hence, or otherwise, prove that $AB \cdot BD = FD \cdot BH$. | (2) |

Question 2

(Adapted from DBE, Nov 2011 Paper 3, Question 11)

ABCD is a parallelogram with diagonals intersecting at F. FE is drawn parallel to CD. AC is produced to P such that $PC = 2AC$ and AD is produced to Q such that $DQ = 2AD$.



- Show that E is the midpoint of AD. (2)
- Prove $PQ \parallel FE$. (3)
- If PQ is 60 cm, calculate the length of FE. (5)

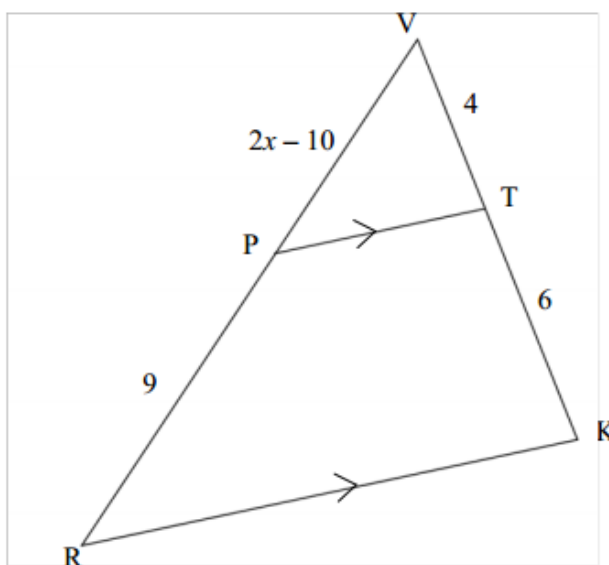
Question 3

(Adapted from DBE, Nov 2012 Paper 3, Question 7.2)

In the diagram below, $\triangle VRK$ has P on VR and T on VK such that $PT \parallel RK$.

VT = 4 units, PR = 9 units, TK = 6 units and $VP = 2x - 10$ units.

Calculate the value of x.



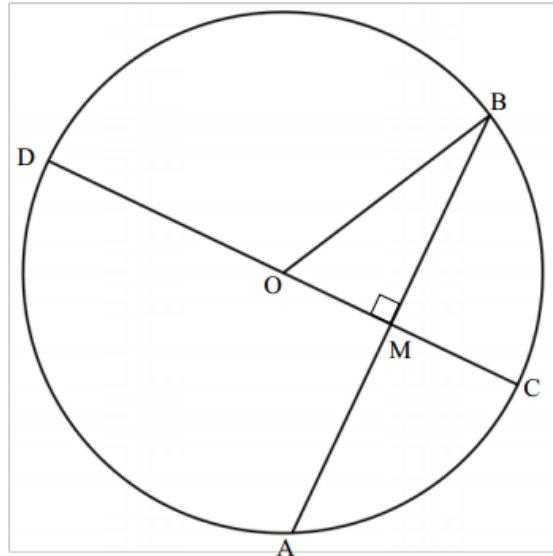
(4)

Question 4

(Adapted from DBE, Nov 2012 Paper 3, Question 10)

In the diagram below, O is the centre of the circle. Chord AB is perpendicular to diameter DC.

CM : MD = 4 : 9 and AB = 24 units.

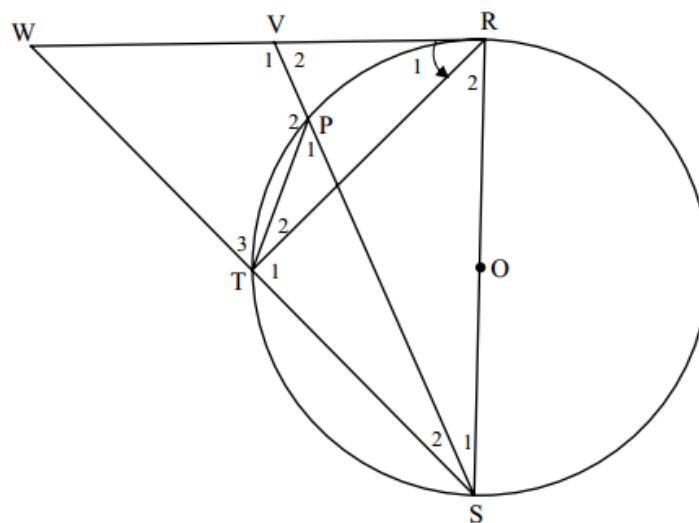


- Determine an expression for DC in terms of x if $CM = 4x$ units. (1)
- Determine an expression for OM in terms of x . (2)
- Hence, or otherwise, calculate the length of the radius. (4)

Question 5

(Adapted from DBE, Nov 2011, Paper 3, Question 8.2)

RS is a diameter of the circle with centre O. Chord ST is produced to W. Chord SP produced meets the tangent RW at V. $\hat{R}_1 = 50^\circ$



Calculate the size of:

- | | |
|--|-----|
| a.) $\widehat{WRS}$ | (1) |
| b.) $\widehat{W}$ | (2) |
| c.) $\widehat{P_1}$ | (3) |
| d.) Prove that $\widehat{V_1} = \widehat{PTS}$ | (4) |

Question 6

(Adapted from DBE, Nov 2012, Paper 3, Question 8.2)

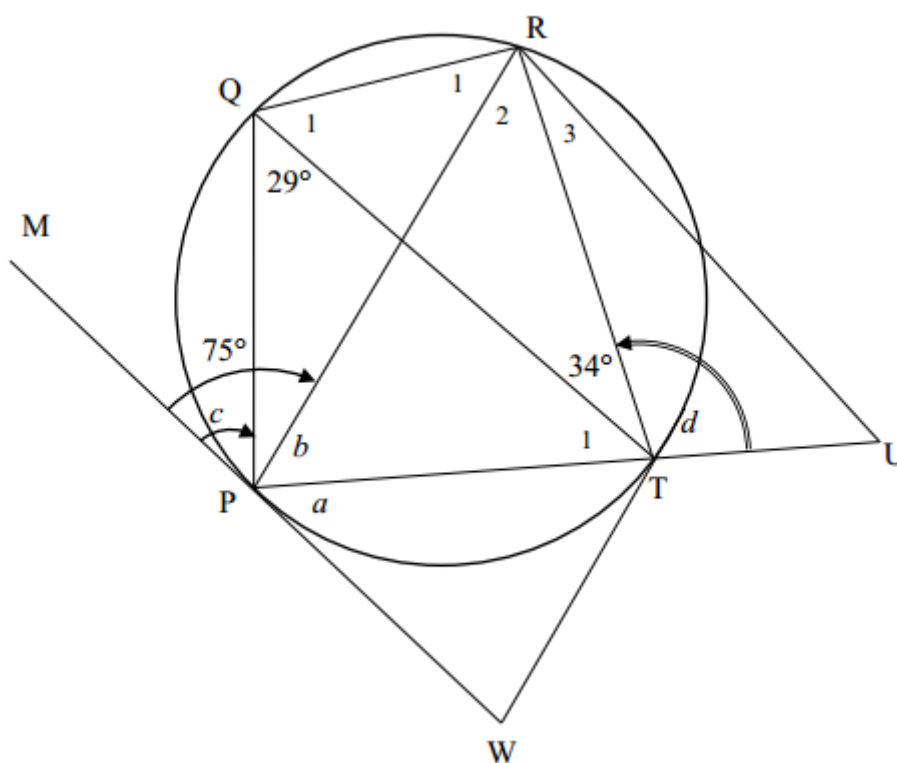
In the diagram points P, Q, R and T lie on the circumference of a circle. MW and TW are tangents to the circle at P and T respectively. PT is produced to meet RU at U.

$$\widehat{MPR} = 75^\circ$$

$$\widehat{PQT} = 29^\circ$$

$$\widehat{QTR} = 34^\circ$$

Let $\widehat{TPW} = a$, $\widehat{RPT} = b$, $\widehat{MPQ} = c$ and $\widehat{RTU} = d$, calculate the values of a, b, c and d.



(9)