Revision F5 (Topics 20-23) [41]

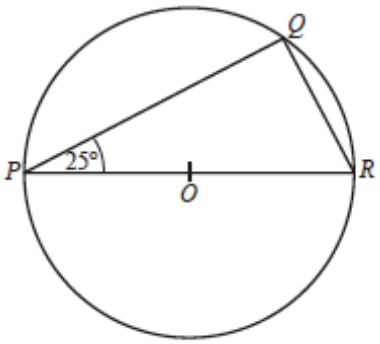
1.

Simplify fully $\dfrac{x^2-16}{3x^2+10x-8}$

(Total 4 marks)

2.

(a) In the diagram, O is the centre of the circle and P, Q and R are points on the circumference.
Angle $P = 25°$

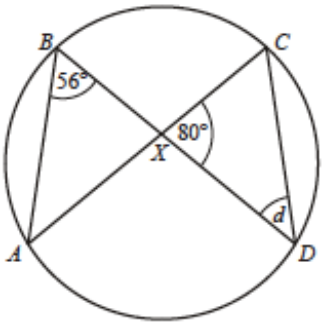


Not drawn accurately

Work out the size of angle R.

(2)

(b) A, B, C and D are four points on the circ
AC meets BD at X.
Angle $ABD = 56°$
Angle $CXD = 80°$



Not drawn accurately

Work out the value of angle d.
You **must** show all your working.

(3)
(Total 5 marks)

3.

Solve the equations

(a) $\dfrac{12-y}{3}=5$

(3)

(b) $\dfrac{2x+1}{4}+\dfrac{4x+1}{6}=1$

(4)
(Total 7 marks)

4. **Non-calculator**

Bethany says that $(2x)^2$ is always greater than or equal to $2x$.

Decide whether she is correct or not.
Show your working to justify your decision. **[3]**

5.

Solve $x^2 - 5x + 3 = 0$

Give your solutions correct to 3 significant figures.

(Total 3 marks)

6.

(a) Find the values of a and b such that

$$x^2 + 6x - 3 = (x + a)^2 + b$$

(2)

(b) Hence, or otherwise, solve the equation

$$x^2 + 6x - 3 = 0$$

giving your answers in surd form.

(3)
(Total 5 marks)

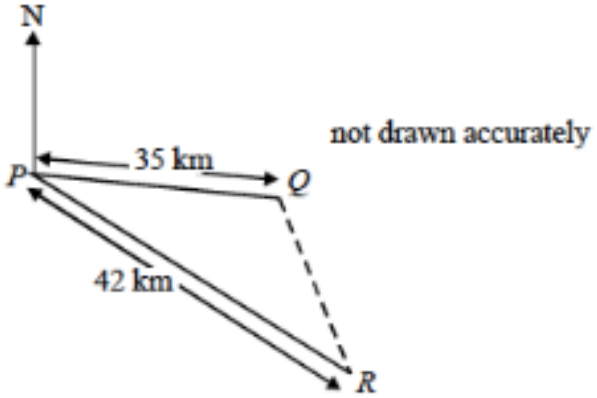
7.

Solve algebraically the simultaneous equations

$$x^2 + y^2 = 25$$
$$y - 2x = 5$$

(Total 5 marks)

8. The diagram shows the positions of three towns P, Q and R.
Q is 35 km from P on a bearing of 100°.
R is 42 km from P on a bearing of 124°.



Calculate the distance from Q to R.

(Total 4 marks)

9.

Solve the equation $\dfrac{2}{y+1} + \dfrac{3}{2y-3} = 1$

(Total 5 marks)