

Hundred Starter 9th October

23. (a) Simplify $\frac{x^2 - 9}{x^2 + 3x}$

$f(x) = \frac{x^2 - 9}{x^2 + 3x}$ $g(x) = \frac{1}{x^2}$

(b) Use your answer to part (a) to find and simplify $fg(x)$.

Nov 2008 3H

16.

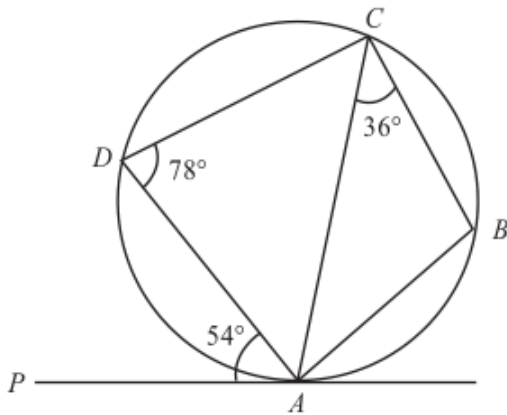


Diagram **NOT** accurately drawn

*A, B, C and D are points on a circle.
PA is the tangent to the circle at A.
Angle PAD = 54°, angle ACB = 36° and angle ADC = 78°.*

(a) (i) Find the size of angle ACD.

..... °

(ii) Give a reason for your answer.

(b) Explain why *BD* is a diameter of the circle.

.....

.....

(2)

(c) (i) Work out the size of angle ABC.

..... °

(ii) Give a reason for your answer.

17. (a) Convert the recurring decimal $0.\dot{7}$ to a fraction.

.....
(2)

$0.0\dot{y}$ is a recurring decimal.

y is a whole number such that $1 \leq y \leq 9$

(b) (i) Write the recurring decimal $0.0\dot{y}$ as a fraction.

.....

(ii) $0.1\dot{y}$ is also a recurring decimal.

Using your answer to part (i), or otherwise, convert the recurring decimal $0.1\dot{y}$ to a fraction.

Give your answer as simply as possible.

18. Simplify fully $\frac{2}{x+2} + \frac{x}{x^2+5x+6}$

19.

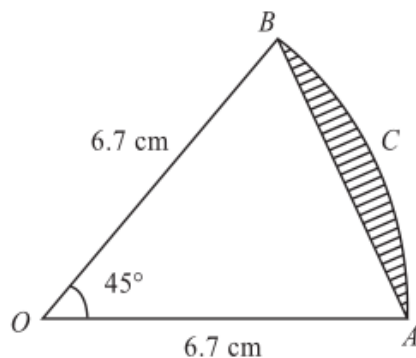


Diagram **NOT**
accurately drawn

AB is a chord of a circle, centre O .

ACB is an arc of the circle.

$OA = OB = 6.7$ cm.

Angle $AOB = 45^\circ$.

Calculate the area of the shaded segment.

Give your answer correct to 3 significant figures.