Name:	Class:	Marked by:

YEAR 1 | PURE MATHEMATICS | PEER MARKED TASK 2

Question	1	2	3	4	5	6	7	8	9	Total
Marks										
Max Marks	3	6	5	6	4	4	9	4	8	49

1. Factorise and hence simplify $\dfrac{3x^2 - 7x + 4}{x^2 - 1}$.

(3)

2. Find the set of values of x for which

(a) $3(x-2) < 8 - 2x$

(2)

(b) $(2x-7)(1+x) < 0$

(3)

(c) **both** $3(x-2) < 8 - 2x$ **and** $(2x-7)(1+x) < 0$

(1)

3. Solve the simultaneous equations

$$x^2 - 3y + 11 = 0, \qquad 2x - y + 1 = 0$$

(5)

4. Solve the equations

(a) $10^p = 0.1$,

(1)

(b) $(25k^2)^{\frac{1}{2}} = 15$,

(3)

(c) $t^{-\frac{1}{3}} = \dfrac{1}{2}$.

(2)

5. The volume V of a cone with base radius r and slant height l is given by the formula $V = \dfrac{1}{3}\pi r^2\sqrt{l^2 - r^2}$.

Rearrange this formula to make l the subject.

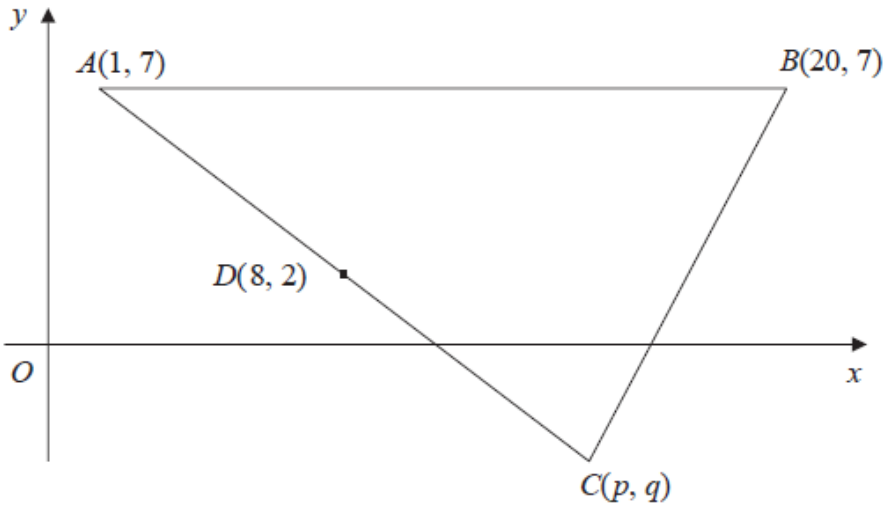
(4)

6 Express $5x^2 + 20x + 6$ in the form $a(x+b)^2 + c$.

(4)

7.

Figure 2



The points $A(1,7)$, $B(20,7)$ and $C(p,q)$ form the vertices of a triangle ABC, as shown in figure 2. The point $D(8,2)$ is the mid-point of AC.

(a) Find the value of p and the value of q.

(2)

The line l, which passes through D and is perpendicular to AC, intersects AB at E.

(b) Find an equation for l, in the form $ax + by + c = 0$, where a, b and c are integers.

(5)

(c) Find the exact x-coordinate of E.

(2)

8. You are given that $a = \frac{3}{2}$, $b = \frac{9-\sqrt{17}}{4}$ and $c = \frac{9+\sqrt{17}}{4}$. Show that $a + b + c = abc$.

(4)

9. Given the simultaneous equations

$$2x + y = 1$$
$$x^2 - 4ky + 5k = 0$$

where k is a non-zero constant,

(a) show that

$$x^2 + 8kx + k = 0$$

(2)

Given that $x^2 + 8kx + k = 0$ has equal roots,

(b) find the value of k.

(3)

(c) For this value of k, find the solution of the simultaneous equations.

(3)