

Problem 1 Simplify (without calculator !)

[/ 4 marks]

1) $8 \frac{\sqrt{72} \times \sqrt{12}}{\sqrt{32} \times \sqrt{27}}$

2) $\frac{\frac{\sqrt{27}}{9}}{\frac{\sqrt{3}}{18}}$

3) $\frac{(7 + \sqrt{3})^2 + (7 - \sqrt{3})^2}{2^3}$

Problem 2 Expand and simplify as far as possible

[/ 2 marks]

$$\frac{(3x^3)^2}{\sqrt{81x^{12}}}$$

Problem 3 Expand and then factorize the following

[/ 3 marks]

$$(x + 5y)^2 - (5x + y)^2$$

Problem 4 Factorise

[/ 4 marks]

1) $18x^8yz - 8x^2y^9z$

2) $x^2y^2z^2 - 10xyz + 30$

Problem 5 Solve using the method of 'completing the square' to solve this equation

$$2x^2 - 20x + 30 = 0$$

[/ 5 marks]

Problem 6

[/ 4 marks]

Assuming $a = \log_3(2)$ $b = \log_3(5)$ $c = \log_3(7)$,give an expression for the three following terms, in terms of a, b, c .

1) $\log_3\left(\frac{49}{60}\right)$

2) $\log_3\left(\frac{\sqrt{30}}{36}\right)$

3) $\log_5(7)$

tot:

/ 22 marks