



SEKOLAH BUKIT SION
AY 2021-2022
ADDITIONAL MATHEMATICS 0606

NAME: _____ CLASS: _____ DATE: _____

Problem 01

Solve the simultaneous equations:

Choose only one.

$$3^x \times 81^y = 27 \quad \text{and} \quad 2^x \times 8^y = \frac{1}{16} \quad [4]$$

$$\sqrt{3}x + \sqrt{2}y = 10 \quad \text{and} \quad \sqrt{2}x - \sqrt{3}y = 0 \quad [4]$$

Problem 02

Solve each equation.

(a) $2^{x+3} \times 4^{x+5} \times 8^{2x-3} = 128^{x+7}$ [4]

(b) $4^{x^2} - 16^{6-2x} = 0$ [4]

Problem 03

Simplify.

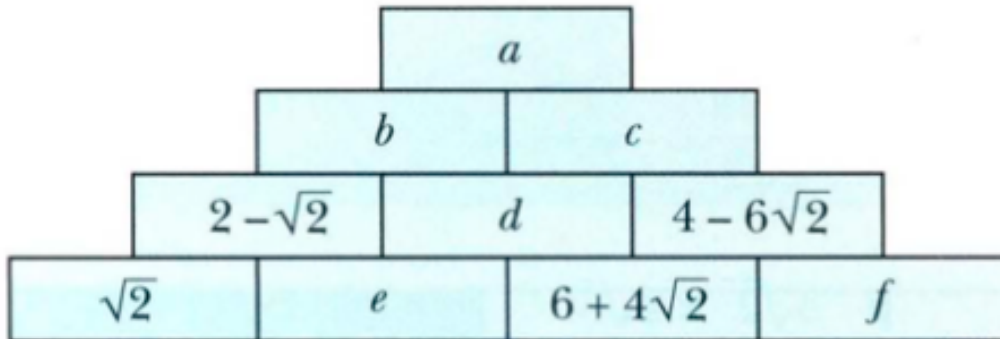
(a) $3\sqrt{20} - 3x\sqrt{80} - 2\sqrt{45x^2} + \sqrt{180}$ [3]

(b) $\frac{2f^3g^2}{6h^{-1}} \times \frac{(4g^2h)^{-2}}{4fh} \div \frac{2f^3}{32fh^3}$ [4]

Problem 04

The number in each box is found by adding the two numbers below it.
Write down the values of a , b , c , d and e .

[5]

**Problem 05**

Choose only ONE.

Find the value of k if

(a) $\sqrt{27} + 3\sqrt{48} - \frac{3}{\sqrt{12}} = k\sqrt{3}$. [3]

(b) $\sqrt{32} - \sqrt{8} - \sqrt{\frac{1}{8}} = k\sqrt{2}$. [3]

Problem 06

Choose only ONE.

Solve the equation below by substitution.

(a) $3^{2x+1} + 9 = 3^{x+3} + 3^x$ [5]

(b) $2(9^{x-1}) - 5(3^x) = 27$ [5]

Problem 07

Without using calculator, rationalise the denominator of

$$\frac{8 - 3\sqrt{2}}{4 + 3\sqrt{2}}$$

Express your answer in the form of $a + b\sqrt{2}$.

[3]

Problem 08

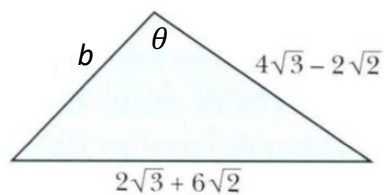


Diagram not to scale.

The perimeter of this triangle is $10\sqrt{3} + 10\sqrt{2}$.

(a) Find the exact length of side b . [1]

(b) Find the exact value (in surd form) of the $\cos \theta$. [4]

[Cosine Rule: $c^2 = a^2 + b^2 - 2ab\cos \theta$]