

**Kingsway Christian College**

**Maths Department**

**Course**: Mathematics Methods Year 12

**Assessment Task**: Test 4 – Logarithms

**Student Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Date**: 26th June 2017

**Assessment Score**: \_\_\_\_\_\_\_\_\_\_\_\_ / 43

**Year Score**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Comments**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Teacher signature**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Parent/ Guardian signature**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**METHODS YEAR 12 Test 4 2017
Logarithms**

**Resource Free Time: 35 mins Marks: / 40**

**No notes or calculators allowed for this section.**

**Question 1 (5 marks)**

**Evaluate the following, giving your answer as a single log term:**

**Question 2 (9 marks)**

Solve each of the following equations. Leave answers in logarithmic form where necessary.

**(a) ** (4 marks)

1. (5 marks)

**Question 3 (5 marks)**

If and Express the following in terms of and

1. (2 marks)
2. (3 marks)

**Question 4 (3 marks)**

The function is drawn below.



(a) Determine the value of *b.*  (2 marks)

(b) Use the graph to approximate the solution to (1 marks)

**Question 5 (3 marks)**

If , show that

**Question 6 (4 marks)**

State the following as *y* in terms of *x*

**Question 7 (9 marks)**

Differentiate each of the following with respect to *x*.

**(a)** (3 marks)

**(b)** (3 marks)

1. *(do not simplify)* (3 marks)

**Question 8 (3 marks)**

The tangent to the curve has a gradient of 1 when

Determine the value of *k*.

**Question 9 (2 marks)**

Determine the following anti-derivative, simplifying your answer using logarithmic laws if necessary:

**EXTRA WORKING**