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|  | |  |  | | --- | --- | | EGC_Black | **Eastern Goldfields College**  ***Year 12 MATHEMATICS METHODS***  ***TEST 2 2016***  ***Calculator Free*** | |

**Total Marks: 36**

**Reading: 2 minutes Time Allowed: 36 minutes**

# 1. (10 marks - 2, 3, 3, 2)

Find the following indefinite integrals:

(a) 

(b) 

(c) 

(d) 

# 2. (6 marks - 3, 3)

Evaluate

(a)

(b) 

# 3. (3 marks)

Evaluate, writing your answer with positive indices:



# 4. (3 marks)

Find y in terms of x given that , and that when *x* = 2, *y* = 5

**5. [5 marks – 3, 2]**

(a) Find  given 

(b) 

**6. [5 marks]**

A curve has a gradient function , where *b* is a constant.

Given that the curve has a maximum turning point when *t* = 2 and passes through the point (1,62),

Determine the equation of the curve.

**7. (4 marks – 1, 3)**

Two functions; *f* (*x*) and *g* (*x*) exist such that:

 and 

(a) Determine which of the following functions are *f* (*x*) and *g* (*x*).



A = \_\_\_\_\_\_\_\_ and B = \_\_\_\_\_\_\_\_\_

(b) Place <, >, or = to make the statements below true.

(i)

(ii)

(iii)

|  |  |
| --- | --- |
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**Total Marks: 25**

**Reading: 2 minutes Time Allowed: 25 minutes.**

### Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# 8. [7 marks – 1, 2, 1, 3]

(a) Find 

(b) Find the Area shaded below



(c) Explain why the answer for (a) is different than (b)

(d) Determine the value of ***a*** to 3 decimal places so that is 2.25.

**9. (5 marks – 4, 1)**

(a) Write an expression that would enable you to find the total area of the two closed regions formed by the intersection of the curves y = x3 – 2x and y = x2.

(b) What is the total area of the two closed regions formed by the intersection of the curves y = x3 – 2x and

y = x2?

# 10. (5 marks – 2, 3)

Fuel was observed to leak from a damaged tank at a rate of litres per minute, where *t* is the number of minutes that have elapsed since the tank was ruptured.

1. How much fuel leaked from the tank during the first two minutes?
2. If the tank initially contained 350 litres of fuel, determine the time taken, to the nearest second, for the tank

to empty.

**11. (8 marks - 6, 2)**

A particle travels along a straight line such that its acceleration at time t seconds is equal to (2t - 8) m/s2. When t = 3 the displacement is 9 metres and when t = 6 the displacement is -6 metres.

1. Find the displacement and velocity when t = 4

(b) Find the distance traveled in the first 10 seconds.