

**University of Bahrain  
College of Science  
Department of Mathematics  
Second Semester 2008/2009**

**MATH A111**

**Final Exam**

**Date: 18/06/2009**

**Time: 08:30 – 10:30 α**

**Max. Mark: 60**

Coordinators: Prof. Shoukry Hassan & Dr. Thuraya Juma

---

<b>Student Name:</b>	
<b>Student ID :</b>	<b>Section:</b>
<b>Your Instructor's Name:</b>	

**Write all your answers on Page 2.**

**Please check that you have 10 pages**

<b>Max. Marks</b>	<b>60</b>
<b>Marks Obtained</b>	

☺ ☺ ☺ ☺   **GOOD LUCK**   ☺ ☺ ☺ ☺

Answer Sheet  $\alpha$

Student Name:.....	Student ID:.....	Section:...
--------------------	------------------	-------------

**Each of the following questions counts 2 Marks**

	<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>
<b>Question 1</b>				
<b>Question 2</b>				
<b>Question 3</b>				
<b>Question 4</b>				
<b>Question 5</b>				
<b>Question 6</b>				
<b>Question 7</b>				
<b>Question 8</b>				
<b>Question 9</b>				
<b>Question 10</b>				
<b>Question 11</b>				
<b>Question 12</b>				
<b>Question 13</b>				
<b>Question 14</b>				
<b>Question 15</b>				
<b>Question 16</b>				
<b>Question 17</b>				
<b>Question 18</b>				
<b>Question 19</b>				
<b>Question 20</b>				
<b>Question 21</b>				
<b>Question 22</b>				
<b>Question 23</b>				
<b>Question 24</b>				
<b>Question 25</b>				
<b>Question 26</b>				
<b>Question 27</b>				
<b>Question 28</b>				
<b>Question 29</b>				
<b>Question 30</b>				



6.  $\begin{pmatrix} 6 & 5 \\ 2 & -1 \end{pmatrix} \begin{pmatrix} 3 & 2 \\ -1 & 4 \end{pmatrix} =$

a)  $\begin{pmatrix} 18 & -2 \\ 10 & -4 \end{pmatrix}$

b)  $\begin{pmatrix} 13 & -8 \\ 7 & 0 \end{pmatrix}$

c)  $\begin{pmatrix} 18 & 10 \\ -2 & -4 \end{pmatrix}$

d)  $\begin{pmatrix} 13 & 32 \\ 7 & 0 \end{pmatrix}$

7. The factorization of  $x^2 + 9x - 10 =$

a)  $(x - 10)(x - 1)$

b)  $(x + 10)(x + 1)$

c)  $(x + 10)(x - 1)$

d)  $(x - 10)(x + 1)$

8. The solutions of the equation  $x^2 + 2x - 35 = 0$  are

a)  $x = -5, x = 7$

b)  $x = -7, x = 5$

c)  $x = -5, x = -7$

d)  $x = 7, x = 5$

9. The simplification of  $\frac{x^2 - 25}{3x} \div \frac{3x^2 + 15x}{9x^2} =$

a)  $x - 5$

b)  $x + 5$

c)  $\frac{1}{x + 5}$

d)  $\frac{x + 5}{3}$

10. The gradient ( $m$ ) and y-intercepts ( $c$ ) of the line  $y = 3x - 5$  are

a)  $m = 3, c = -5$

b)  $m = -5, c = 3$

c)  $m = 1/3, c = 1/5$

d)  $m = -3, c = -5$



16. If  $f(x) = \sqrt{x} - 1$ , then  $f^{-1}(x) =$

a)  $\sqrt{x-1}$

b)  $\frac{1}{\sqrt{x}} + 1$

c)  $\frac{1}{\sqrt{x}-1}$

d)  $\sqrt{x+1}$

17. The function  $y = x^2 - 4x + 7$  has a minimum at the point

a) (2, 19)

b) (3, 2)

c) (2, 3)

d) (-2, 19)

18. The gradient (slope) of the line that passes through (6, 8) and (1, -2) is

a) 2

b)  $\frac{1}{2}$

c)  $-\frac{1}{2}$

d) 2

19.  $\begin{pmatrix} 2 & 5 \\ -3 & 0 \end{pmatrix} - \begin{pmatrix} 2 & -4 \\ 3 & 6 \end{pmatrix} =$

a)  $\begin{pmatrix} 0 & 1 \\ -6 & 6 \end{pmatrix}$

b)  $\begin{pmatrix} 0 & 9 \\ 6 & -6 \end{pmatrix}$

c)  $\begin{pmatrix} 0 & 9 \\ 6 & 6 \end{pmatrix}$

d)  $\begin{pmatrix} 0 & 9 \\ -6 & -6 \end{pmatrix}$

20. If  $f(x) = 2x^4 - x^{-4} + 15$  then  $f'(x) =$

a)  $4x^3 + 4x^{-3}$

b)  $8x^3 + 4x^{-5}$

c)  $8x^4 + 4x^{-4}$

d)  $8x^3 - 4x^{-3}$



26. The solution of  $\frac{2x+4}{5} = \frac{x-3}{2}$  is

a)  $x = \frac{23}{9}$

b)  $x = 7$

c)  $x = 23$

d)  $x = \frac{9}{7}$

27. If  $\log_{10}(x+4) = 1$  then  $x =$

a) 6

b) 0

c) 14

d) 10

28. If  $y = x^5 + x^2 + 12$ , then  $\frac{d^2y}{dx^2} =$

a)  $5x^4 + 2x$

b)  $20x^3$

c)  $20x^3 + 2$

d)  $12x^3 + 2x$

29. If  $B = \begin{pmatrix} 4 & 11 \\ 1 & 3 \end{pmatrix}$  then  $B^{-1} =$

a)  $\begin{pmatrix} 3 & 11 \\ 1 & 4 \end{pmatrix}$

b)  $\begin{pmatrix} 1/4 & 1/11 \\ 1 & 1/3 \end{pmatrix}$

c)  $\begin{pmatrix} 4 & -11 \\ -1 & 3 \end{pmatrix}$

d)  $\begin{pmatrix} 3 & -11 \\ -1 & 4 \end{pmatrix}$

30. Expressing  $4^x = 7$  in logarithmic form gives

a)  $x = \log_7 4$

b)  $x = \log_4 7$

c)  $7 = \log_4 x$

d)  $4 = \log_x 7$



# Draft Page