



# **CANADIAN UNIVERSITY OF DUBAI**

## **MATHEMATICS PLACEMENT TEST**

### **BUSINESS MAJORS**

Spring Semester 2010

#### **INSTRUCTIONS (PLEASE READ CAREFULLY)**

- **The test consists of 20 questions. Each question is followed by four suggested answers designated by (A), (B), (C), (D). Mark the correct answer by circling it.**
- **Calculators are NOT allowed for this test.**
- **The grading is as follows:**
  - **5 points for each correct answer;**
  - **0 points for each unanswered question;**
  - **-1 point for each incorrect answer.**
- **Make sure to write your name and ID number**

|               |                        |             |
|---------------|------------------------|-------------|
| <b>Name:</b>  | <b>ID Number:</b>      |             |
| <b>Total:</b> | <b>Pass (&gt; 50%)</b> | <b>Fail</b> |

1.  $\left(\frac{4x^2}{y^3}\right)^{\frac{1}{2}} \left(\frac{y^5}{9x}\right)^{\frac{3}{2}}$  is equal to

(A)  $\frac{2y^6}{3x}$

(B)  $\frac{2y^6}{27\sqrt{x}}$

(C)  $\frac{2xy^{\frac{3}{2}}}{3\sqrt{3}}$

(D)  $\frac{54x^{\frac{5}{2}}}{y^9}$

2. The product  $(x-1)(x-2)(x+3)$  is equal to

(A)  $x^2 - 7x + 6$

(B)  $x^3 + 6x^2 + 7x + 6$

(C)  $x^3 + 6$

(D)  $x^3 - 7x + 6$

3. The solutions of the equation  $x+1 = \frac{2}{x}$  are

(A)  $x = -2$  or  $2$

(B)  $x = -1$  or  $1$

(C)  $-1$  or  $2$

(D)  $x = 1$  or  $-2$

4.  $x^3 - 8x - 3$  is equal to

(A)  $(x + 3)(x^2 - 3x + 1)$

(B)  $(x + 3)(x^2 - 3x - 1)$

(C)  $(x - 1)(x^2 + 3x + 3)$

(D)  $(x - 3)(x^2 + 3x + 1)$

5. The set of solutions of the equation  $x - \sqrt{x+1} = 1$  consists of

(A) 3 and 0

(B) 3

(C) 0

(D) No solutions

6. If  $x^2 - 2x - 3 > 0$  then

(A)  $x > 3$  or  $x < -1$

(B)  $x > 1$  or  $x < -3$

(C)  $x \geq 1$  or  $x \leq -3$

(D)  $-1 < x < 3$

7.  $\frac{\sqrt{5}+2}{\sqrt{5}-2}$  is equal to

(A)  $9 - 4\sqrt{5}$

(B)  $9 + 4\sqrt{5}$

(C)  $-9 + 4\sqrt{5}$

(D) 2

8. The graph of the function  $y = \frac{1}{x} - \frac{1}{2-x}$  cuts the x-axis at the points

(A) (0, 0)

(B) (0, 1)

(C) (1, 0)

(D) (0, 0) and (2, 0)

9. The inequality  $|2x - 1| < 5$  is satisfied when

(A)  $x > 0$

(B)  $-2 < x < 3$

(C)  $-3 < x < 2$

(D)  $x < 3$

10. If  $\left| \frac{x-1}{x+2} \right| = \frac{1}{2}$  then

(A)  $x = 0$  or  $x = 2$

(B)  $x = 4$  or  $x = -4$

(C)  $x = 0$  or  $x = -2$

(D)  $x = 0$  or  $x = 4$

11. If  $\frac{1}{x} < 5$  then

(A)  $x < \frac{1}{5}$

(B)  $x > \frac{1}{5}$  or  $x < 0$

(C)  $0 < x < \frac{1}{5}$

(D)  $x < \frac{1}{5}$  or  $x > 1$

12. If  $f(x) = x - 3$ ,  $g(x) = \sqrt{x + 4}$  then  $g(f(0))$  is equal to

(A) 0

(B) 2

(C) -1

(D) 1

13. The center  $C$  and radius  $R$  of the circle  $x^2 + 4x + y^2 = 0$  are given by

(A)  $C(0, 0), R = 4$

(B)  $C(-4, 0), R = 0$

(C)  $C(-2, 0), R = 2$

(D)  $C(2, 0), R = 2$

14. If  $\frac{\pi}{2} \leq \theta \leq \pi$  and  $\sin \theta = \frac{2}{3}$  then  $\tan \theta$  is equal to

(A)  $-\frac{2}{\sqrt{5}}$

(B)  $\frac{2}{\sqrt{13}}$

(C)  $\frac{\sqrt{5}}{2}$

(D)  $-\frac{1}{\sqrt{3}}$

15.  $\log_8(4)$  is equal to

(A)  $-\frac{2}{3}$

(B)  $\frac{3}{2}$

(C)  $\frac{2}{3}$

(D)  $-\frac{3}{2}$

16.  $\cos\left(\frac{5\pi}{4}\right)$  is equal to

(A) -1

(B)  $\frac{1}{2}$

(C)  $-\frac{1}{2}$

(D)  $-\frac{1}{\sqrt{2}}$

17.  $(x + 2y)^3$  is equal to

(A)  $x^3 + 6x^2y + 12xy^2 + 8y^3$

(B)  $x^3 + 4x^2y + 4y^2$

(C)  $8x^3y^3$

(D)  $x^3 + 12x^2y + 6xy^2 + 8y^3$

18.  $2^{2x-1} \cdot 4^{3x-2}$  is equal to

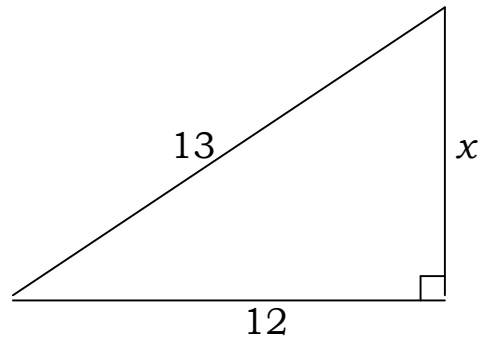
(A)  $2^{4x-6}$

(B)  $2^{8x-3}$

(C)  $4^{4x} \cdot 2^{-5}$

(D)  $4^{4x-2}$

19. In the right angled triangle



the length  $x$  is

- (A) 1
- (B)  $\sqrt{13}$
- (C) 5
- (D)  $\frac{1}{\sqrt{12}}$

20. The domain of the function  $f(x) = \frac{1}{\sqrt{x^2 - 9}}$  is:

- (A)  $x > 3$
- (B)  $x \geq 3$  or  $x \leq -3$
- (C)  $x > 3$  or  $x < -3$
- (D)  $x < -3$  and  $x > 3$