بسم الله الرحمن الرحيم

KINGDOM OF SAUDI ARABIA
Ministry of Higher Education
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College of Science
Department of Mathematics and Statistics

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الإمام محمد بن سعود الإسلامية كلية العلوم
قسم الرياضيات والإحصاء

MIDTERM-2 EXAM

COURSE: TRACK OF APPLIED SCIENCE (MATH 050)		
SEMESTER: FIRST	YEAR: 1434/1435	DURATION: 90 min

ربيض ٠٥٠

FORM (A)

	الشعبة	Answer Key	الاسم
	التوقيع		الرقم الجامعي

INSTRUCTIONS

1) The exam contains **05 Pages** total (including the first pages!!) and **04 QUESTIONS.**
2) NO book, NO notes, NO Calculator.

	SCORE
QUESTION 1	/7
QUESTION 2	/7
QUESTION 3	/6
~~QUESTION 4~~	~~/3~~
TOTAL	/20

Question 1: (7 Marks) Find all real solutions to each equation:

a) $2(x+1) = 3x+2$

$2X+2 = 3X+2$ (1)

$3X-2X = 0$ (0.5)

$\boxed{X = 0}$ (0.5)

b) $9 - |2x-3| = 6$

$-|2X-3| = 6-9$ (0.5)

$|2X-3| = 3$

(0.5) $2X-3 = 3$ or $2X-3 = -3$

(0.5) $2X = 6$ or $2X = 0$

(0.5) $\boxed{X=3}$ or $\boxed{X=0}$

c) $x^2+1 = -6x$

(1) $X^2+6X+1=0$

$a=1$, $b=6$, $c=1$

(0.5) $X = \dfrac{-6 \pm \sqrt{36-4}}{2}$

(1) $= \dfrac{-6 \pm \sqrt{32}}{2} = \dfrac{-6 \pm 4\sqrt{2}}{2}$

(0.5) $\boxed{X = -3 \pm 2\sqrt{2}}$

Question 2: (7 Marks) Solve each inequality:

a) **Solve** the indicated **compound inequality** and **graph** the solution

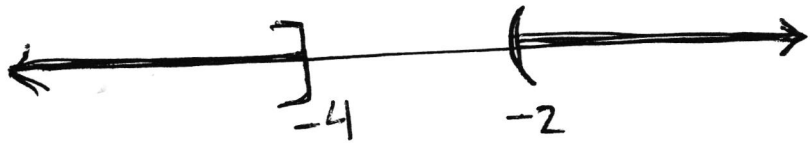
$1-\frac{3}{2}x<4$ and $\frac{1}{4}x-2\leq -3$

$-\frac{3}{2}x<4-1$ and $\frac{1}{4}x\leq -3+2$ (0.5)

$-\frac{3}{2}x<3$ and $\frac{1}{4}x\leq -1$ (0.5)

$x>-2$ and $x\leq -4$ (1)

$(-\infty,-4]\cap(-2,\infty)=\phi$ } (1.5)



b) **Solve** the inequality $5\geq|4-x|$

$|4-x|\leq 5$

$\Rightarrow -5\leq 4-x\leq 5$ (1)

$-5-4\leq -x\leq 5-4$ (1)

$-9\leq -x\leq 1$ (0.5)

$\boxed{9\geq x\geq -1}$ (0.5)

$[-1,9]$ (0.5)

Question 3: (6 Marks)

a) Identify the **slope** and **y-intercept** of the line $y - 2 = -\frac{3}{2}(x + 5)$.

slope $\boxed{m = \frac{-3}{2}}$ (1), put $x = 0$

$$y - 2 = \frac{-3}{2}(5) \Rightarrow y = 2 - \frac{15}{2}$$

$$y = \frac{-11}{2}$$

y-intercept $= \boxed{\left(0, \frac{-11}{2}\right)}$ (1)

b) Find the **distance** between the two points (-1,-2) and (1,0).

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(1+1)^2 + (0+2)^2} \quad (1)$$

$$= \sqrt{4 + 4} \quad (0.5)$$

$$= \boxed{2\sqrt{2}} \quad (0.5)$$

c) Determine the **center** and the **radius** of the circle $y^2 = 25 - (x + 1)^2$.

$C = (-1, 0)$ (1)

$r = 5$ (1)