



KING SAUD UNIVERSITY
PREPARATORY YEAR DEANSHIP
BASIC SCIENCE DEPARTMENT



MATH 140

MIDTERM EXAM / 2nd SEMESTER 1436-1437

DATE: 03/04/2016

INSTRUCTOR:

SECTION:

ST. NAME:

TIME ALLOWED: 2 Hours

ST. ID:

* يتكون هذا الاختبار من (8) مسائل مقالية موزعة على صفتين والدرجة العليا للاختبار هي (30) درجة.

QUESTION ONE: Solve for x :

① $3x - 2 = 7x + 4$

② $\frac{x}{3} - \frac{x+1}{2} = 1$

③ $(x-3)^2 = 4$

④ $x^2 - 3x - 23 = 5$

(6 Marks: 1.5 + 1.5 + 1.5 + 1.5)

QUESTION TWO: Solve the following inequalities, and write the solution set in interval notation.

① $5(3x + 2) - 2 > 3x - 4$

② $|3x + 2| \leq 5$

(3 Marks: 1.5 + 1.5)

QUESTION THREE:

① Perform $(2 - 5i)(1 + 2i)$ and write your answer in standard form.

② Find the values of the real numbers x and y such that

$$(3x - 2) + 15i = 7 + \frac{3}{2}yi$$

(3 Marks: 1.5 + 1.5)

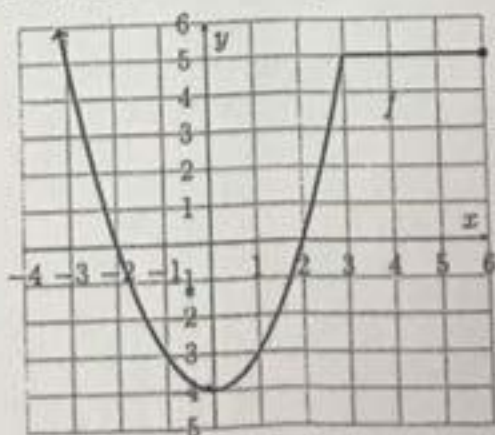
QUESTION FOUR: Find the domain for the following functions:

① $f(x) = \sqrt{5x - 15}$

② $f(x) = \frac{3x}{|x + 4| - 3}$

(3 Marks: 1.5 + 1.5)

QUESTION FIVE: Use the graph of the function f below to answer the following questions.



① Determine the intervals on which f is increasing, decreasing or constant.

② Find the range of f .

③ Find the intercepts of f .

(4.5 Marks: 1.5 + 1.5 + 1.5)



QUESTION SIX: Consider the linear function $f(x) = -2x + 4$. Find

- ① The slope for the graph of f .
- ② Sketch the graph of f .

(3 Marks: 1.5 + 1.5)

QUESTION SEVEN: Determine algebraically whether the function $f(x) = \frac{x^3}{x^2 + 3}$ is even, odd or neither.

(1.5 Mark)

QUESTION EIGHT: Given that $f(x) = 3x + 1$ and $g(x) = \sqrt{1 - 3x}$. Find

- ① $f(-3)$.
- ② $(g \circ f)(x)$.
- ③ $(f \cdot g)(-5)$.
- ④ The inverse function of f .

(6 Marks: 1.5 + 1.5 + 1.5 + 1.5)

GOOD LUCK