Exam 1 – ACMAT117

Tuesday, September 30, 2025

This is a closed-book exam. You have 90 minutes

Calculators (non-graphing) are allowed ONLY to check your answers, but all answers should be **exact and simplified** unless stated otherwise.

Justify your answers to obtain full credit (and partial credit, too).

Please verify that you have all pages. If you need scratch paper, please ask.

You are welcome to use your own version of the reference page if you brought one. Otherwise, you will be given a standard blank version.

Name (first and last):_____

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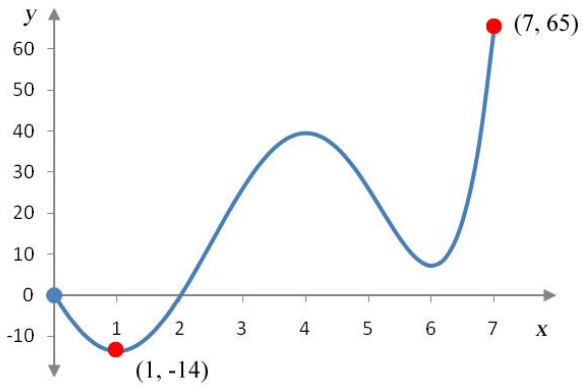
1. (*15 points*)

(a) Determine if the following relation is a function:

$$\{(2,4),(-4,5),(1,5),(3,3)\}$$

(b) Consider the following graph:



(a) What is the domain and range of the graph? Use interval notation.

(b) Where is the graph increasing? Where is the graph decreasing?

2. (*15 points*)

(a) Find the average rate of change of $f(x) = x^3 + 1$ from $x = -1$ to $x = 2$

(b) Find the difference quotient $\frac{f(x+h)-f(x)}{h}$ for $f(x) = 3x^2$

3. (*10 points*) Find any equation of the following:

(a) The line through the points $(1, -5)$ and $(-3, 1)$

(b) The line passing through $(3, 2)$ and perpendicular to the line $y = \frac{2}{3}x - 7$

4. (*15 points*) Solve the following:

(a) $4x - 5 = 1 - 2x$

(b) $x - 2 = \dfrac{3x}{7} - 1$

(c) $-3(1 - 2x) + x \leq 4 - (x + 2)$. Write your answer in interval notation

5. (*15 points*)

(a) Find the vertex of $f(x) = 2x^2 - 4x - 1$

(b) Solve $x^2 - x = 20$

(c) Solve $2x^2 + 3x - 14 = 0$

Final Score

	Score	Out of
Question 1		15
Question 2		15
Question 3		20
Question 4		15
Question 5		20
Total		90