

**TEST #1**

**Math 132**

**Name:** \_\_\_\_\_

<b>Problem</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total</b>
<b>Possible Score</b>	<b>18</b>	<b>44</b>	<b>35</b>	<b>33</b>	<b>20</b>	<b>150</b>
<b>Your Score</b>						

SHOW ALL WORK. Any solution that is not accompanied by the appropriate work necessary for solving the problem will receive no credit. If you need more space, you may use the back of the page.

1. (18 pts) Use long division of polynomials to divide  $3x^4 - 5x^3 + 7x^2 + x - 12$  by  $x^2 - 2x + 6$ . Be sure to state the quotient (ie. the answer) and the remainder.

2. A manufacturer of beds has a daily production cost of  $C = 0.25x^2 - 10x + 800$  where  $C$  is the total cost in dollars and  $x$  is the number of beds produced.

(a) (20 pts) Complete the square to write  $C$  in the form  $p(x + q)^2 + r$ .

(b) (12 pts) Use part (a) to determine how many beds must be produced per day to minimize the cost? What is this minimum cost?

(c) (12 pts) Use part (a) to determine how many beds must be produced so that the cost of production is \$821?

3. Suppose  $\log_m(x) = 3.4$ ,  $\log_m(y) = 5.8$ , and  $\log_m(z) = -2.3$ .

(a) (15 pts) Calculate  $\log_m\left(\frac{\sqrt{z}}{x^3y}\right)$  (**Round the answer to two decimal places**).

(b) (20 pts) If  $\ln(x) = 2.5$ , then what is  $m$  (**Round the answer to two decimal places**)?

4. Suppose  $f(x) = \frac{3x - 2}{1 - 5x}$  and  $g(x) = \sqrt{4x + 9}$ .

(a) (15 pts) Evaluate  $f \circ g(2)$ .

(b) (18 pts) Evaluate  $g \circ f(x)$ .

5. (20 pts) Solve  $\log_2(2x - 1) + \log_2(x - 3) = 3$ .