

Math 1730-016: Practice Test two

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Your Name:.....

Problem 1

A soft-drink manufacturer has daily costs of

$$C = 70000 - 120x + 0.055x^2$$

where C is the total cost (in dollars) and x is the number of units produced. How many units should be produced each day to yield a minimum cost?

Problem 2

Divide using long division:

$$\frac{3x^3 + 4x - 1}{x^2 + 1}.$$

Problem 3

Identify any intercepts and asymptotes of the graph of the function

$$f(x) = \frac{x^2 + 2}{x - 1}.$$

Problem 4

Divide using synthetic division:

$$\frac{2x^3 - 25x^2 + 66x + 48}{x - 8}.$$

Problem 5

Use synthetic division to show that $x = -4$ is a zero of the function given by

$$f(x) = 5x^3 + 33x^2 - 50x - 2.$$

Problem 6

Perform each operation

(a) $(4 + \sqrt{5}i)(4 - \sqrt{5}i)$

(b) $3 - 10i^2 - (3 + 5i)$

(c) $\frac{2-4i}{5+12i}$

Problem 7

Solve the inequality

$$2x^2 + 5x > 12.$$

Problem 8

Identify any intercepts and asymptotes of the graph of the function

$$f(x) = \frac{2x^2 - 5x - 12}{x^2 - 16}.$$

Problem 9

Solve the inequality

$$\frac{2}{x} \leq \frac{1}{x+6}.$$

Problem 10

Graph each function. Compare the graph of each function with the graph of $y = x^2$.

(a) $f(x) = -2x^2$

(b) $f(x) = x^2 + 2$

(c) $f(x) = (x + 2)^2$