Math 112 Final Review

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Math 112

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A couple invests $4,000 into an apiary. On average each pint of honey the apiary produces costs $2.76 to produces and sells for $10.20 per pint. How many pints of honey does the couple need to sell in order to break even?

Solve for x.

$$(x - 1)(x + 10) = 16$$

Consider the quadratic function $f(x) = 3x^2 - 13 - 10$. What is the vertex of $f(x)$?

A toy rocket is launched vertically in the air from a 7-foot launching platform with an initial velocity of 40 meters per second. If the equation modeling the height of the rocket is given by $h(t) = -4.9t^2 + v_0 t + h_0$ where v_0 is the initial velocity, and h_0 is the initial height, what is the maximum height reached by the rocket?

Consider the polynomial function $f(x) = 3(x-5)^2(x^2+2)^3(x+3)^4$.
What is the end behavior of the graph?

Consider the rational function:

$$f(x) = \frac{x^2 - 4}{(x^2 - x - 6)}$$

What is the domain of $f(x)$?

Consider the rational function:

$$f(x) = \frac{x^2 - 4}{(x^2 - x - 6)}$$

What is the horizontal asymptote of $f(x)$?

Consider the rational function:

$$f(x) = \frac{x - 4}{(x^2 + x - 6)}$$

What are the intercepts of $f(x)$?

Find a formula for the parabola whose vertex is at $(-2, -1)$ and passes through the point $(0, 13)$.

Consider the following exponential function:

$$f(x) = 3 \cdot \left(\frac{5}{3}\right)^{-2} + 3$$

. List the transformations of the base graph of $f(x)$.

Consider the following exponential function:

$$f(x) = 3 \cdot \left(\frac{5}{3}\right)^{-x} + 3$$

. What is the asymptote of $f(x)$?

Solve for x:

$$\frac{e^{x+5}}{x^{3x}} = e^{x-1}$$

Consider the equation:

$$f(x) = \log_3(x + 11)$$

(1) What is the domain of $f(x)$?

Suppose 128 ounces of a radioactive substance exponentially decays to 28 ounces in 6 hours. What is the half-life of the substance?