

MATH 1520 Assignment 1

Attempt all questions and show all your work. Leave answer's in exact form (i.e. $\ln 1.03$ or $9/7$ instead of a decimal approximation. The assignment is due Friday, October 4 AT THE BEGINNING OF CLASS.

- Find k so that the line through $(-3, 5)$ and $(1, k)$ is perpendicular to $5x + 3y = 4$.
- Dr. Nick's Pastrys sells cakes for various math events. Assume the cost function is linear. His marginal cost to make one cake is \$8. His total cost to produce 50 cakes is \$500. He sells them for \$13 each.
 - Find and graph the linear cost function.
 - How many cakes must he make and sell in order to break even?
 - How many cakes must he produce and sell to make a profit of \$600.
- Given that 0 degrees Celsius is 32 Fahrenheit and 50 degrees Celsius is 122 degrees Fahrenheit:
 - Find the linear relationship between Celsius and Fahrenheit (have Celsius as a function of Fahrenheit)
 - Convert 98.6 degrees Fahrenheit to Celsius.
 - Convert 100 degrees Celsius to Fahrenheit.
- Find the domain of
 - $f(x) = -\frac{3}{3x^2 - 4x + 1}$
 - $f(x) = \ln(32 - 2x^2)$
- For $f(x) = \frac{x}{x-1}$, find $\frac{f(x+h) - f(x)}{h}$.
- Solve the following equations
 - $9^{2x+3} = 27^{4x-7}$
 - $\log_5(x^2 - 11) - \log_5(x - 5) = 2$
 - $4e^{1-3a} = 20$
 - $5(1.12)^x = 3(1.09)^{2x}$
- Brighton Early invests a \$32,000 inheritance in a fund paying 3.5% per year compounded continuously.
 - What will the amount be after 3 years?

- (b) If after those 3 years, he changes to an account paying 6% per year compounded semi-annually, what will be the amount after 7 years (from the original investment)?
8. Warren Peace invests \$10,000 in an account paying 6% per year compounded quarterly. How many years are required for the compounded amount to at least double?