General introduction
26 class meetings, not counting exam days
27 textbook sections
27/26=1.0385
About 1 section per class meeting

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1 The Derivative

1.1 Introduction

page 16: 2, 5

Your Name MTH 263 bonus quiz 1 Write each problem.

No calculator.

1. Simplify $\dfrac{\frac{2}{3}}{\frac{9}{4}}$.

$\frac{2}{3} \cdot \frac{4}{9} = \boxed{\frac{8}{27}}$

2. Write one trigonometric identity.

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example $\sin^2 x + \cos^2 x = 1$

3. Solve $\log_2(x) + \log_2(x+1) = 2$.

Remember $\log_b(p) + \log_b(q) = \log_b(pq)$

$\log_2(x(x+1)) = 2$ | $b^m = n \iff \log_b(n) = m$

$2^{\log_2(x(x+1))} = 2^2$

$x(x+1) = 4$

$x^2 + x - 4 = 0$

$x = \frac{-1 \pm \sqrt{1-(4)(1)(-4)}}{2}$

$x = \frac{-1 \pm \sqrt{17}}{2}$

Note: $x > 0$ and $x+1 > 0$

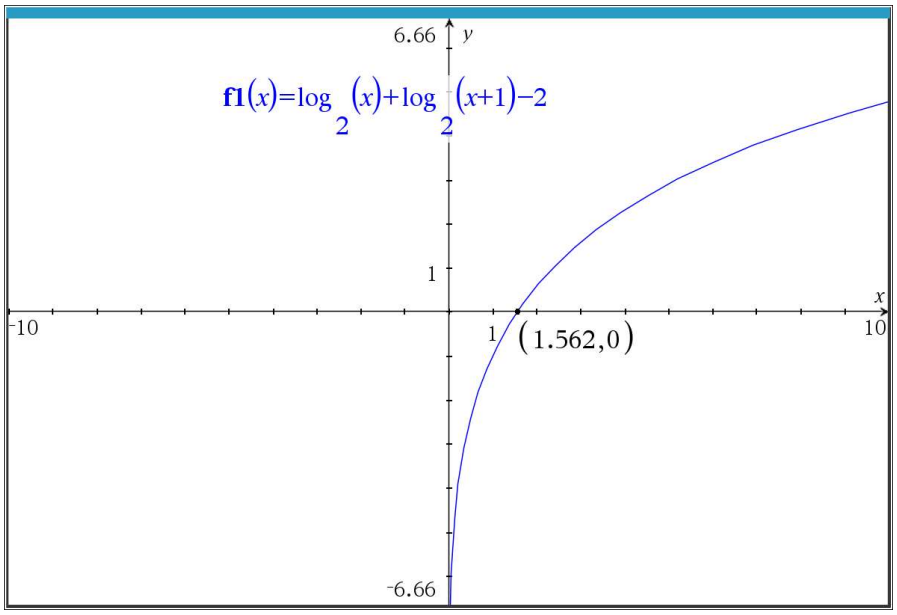
$x > -1$

$\Rightarrow x > -1$

$\therefore x = \frac{-1 - \sqrt{17}}{2}$ is an extraneous solution

$\therefore x = \frac{-1-\sqrt{17}}{2}$ is an extraneous solution

$$x = \frac{-1+\sqrt{17}}{2}$$



$\frac{-1+\sqrt{17}}{2}$ ▸ Decimal 1.56155

4. Find the domain of $f(x) = \sqrt{x-1}$ and give your reason.

$x - 1 \geq 0$ to avoid imaginary values

$x \geq 1$

domain $= \{x \mid x \geq 1\}$

$= [1, \infty)$

5. If x = c is a zero of the polynomial $p(x)$, what can you say about factors of $p(x)$?

$p(x) = (x-c)\,q(x)$

$p(c) = (c-c)\,q(c)$

$= (0)\,q(c) = 0$

$= (0)\, q(i) = 0$

x-c is a factor of p(x)

6. Simplify the difference quotient of $f(x) = 2x + 3$.

$$\frac{\Delta f}{\Delta x} = \frac{f(x+h) - f(x)}{h}$$ difference quotient

$$= \frac{[2(x+h) + 3] - [2x + 3]}{h}$$

$$= \frac{2x + 2h + 3 - 2x - 3}{h}$$

$$= \frac{2h}{h} = \boxed{2}$$

1.1 I gave a brief overview of this textbook section