

MAT3-119 Calculus of a Single Variable I

Quiz 2 October 30, 2015

solution

name

1. (4 pts.) Let  $Q(x)$  be a degree six polynomial function.

a. What is the natural domain of  $Q(x)$ ?

$\mathbb{R}$  or  $(-\infty, \infty)$

All poly's have nat. dom  $\mathbb{R}$ .

b. How many x-intercepts can the graph of  $Q(x)$  have? Briefly justify your answer.

0 to 6. Fund Thm of Algebra says deg 6  $\rightarrow$  6 zeroes.

c. How many y-intercepts can the graph of  $Q(x)$  have? Briefly justify your answer.

1 vertical line test

d. Is it possible that  $Q(x) \leq 17$  for all real  $x$ ? Briefly justify your answer.

yes neg  $x^6$  term would give gen. shape



2. (2 pts.)

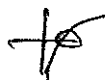
a. What point is on the graph of  $y = b^x$  for every positive number  $b$ ?

$(0, 1)$



b. What point is on the graph of  $y = \log_b x$  for every positive number  $b$ ?

$(1, 0)$



3. (4 pts.) Consider the function  $f(x) = 5 \cos(\pi x)$ .

a. What is the period of  $f$ ?

$$\frac{2\pi}{\pi} = 2$$

b. What is the range of  $f$ ?

changes  $[-1, 1]$  to  $[-5, 5]$