

Precalculus, MiniTest 1 Review

Dr. Graham-Squire, Fall 2013

•The test will cover sections 1.6 and 2.1-2.4.

•To study, you can look over your notes, rework HW problems on WebAssign, quizzes, and problems from the notes, as well as work out the practice problems given for each section. The Review Questions at the end of Chapter 2 are also good practice. You can also look at the following problems on my website: Quiz 1, questions 3 and 4; Test 1, questions 2, 4, and 5 (for #2, just try to sketch the graph).

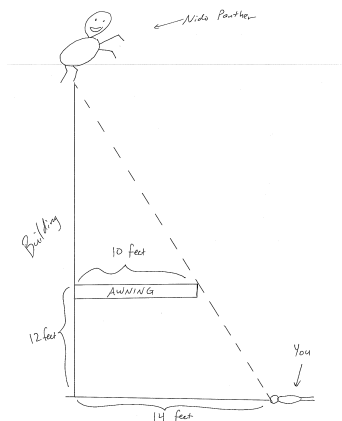
•Calculators are allowed on this test, but for certain questions you may not be allowed to use a calculator. It is highly recommended that you bring a calculator because you cannot use cell phones or computers during the test.

•Some practice problems to work on:

1. Jane invests \$1000 in a bank account at a certain interest rate, and \$3000 at an interest rate that is 3% higher. At the end of one year, she has earned \$270 from the two accounts. At what rate did she invest the \$1000?

Ans: 4.5%

2. HPU is constructing a new math building, and of course they want to make it as beautiful as possible. At the top of the building in the front entranceway they decide to build a giant panther statue with the head of Nido Qubein. You want to find out how tall the building is, so you do the following: From the front entrance, you walk out and lay on the ground at the point where your line of sight connects the awning with the base of the statue. If your head is 14 feet from the bottom of the building, the awning is 12 feet high, and the awning sticks out 10 feet horizontally from the building, find out how tall the building is.

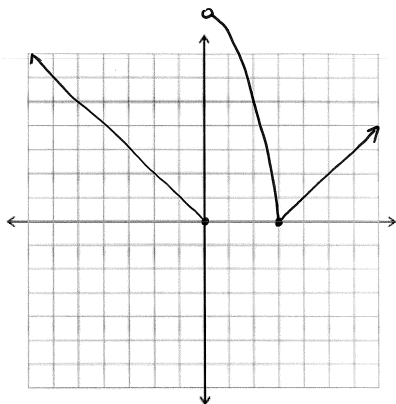


Ans: 42 feet.

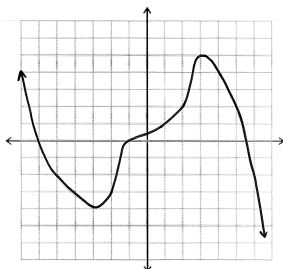
3. A hotel charges \$60 a night for the first three nights, and \$45 each additional night thereafter. Create a piecewise function $C(x)$ to represent the cost of staying x nights.

$$\text{Ans: } C(x) = \begin{cases} 60x & \text{if } 0 \leq x \leq 3 \\ 180 + 45(x - 3) & \text{if } x > 3 \end{cases}$$

4. Sketch a graph of the piecewise function $g(x) = \begin{cases} -x & \text{if } x \leq 0 \\ 9 - x^2 & \text{if } 0 < x \leq 3 \\ x - 3 & \text{if } x > 3 \end{cases}$



5. Find all local maximums and minimums (and where they occur), as well as the intervals where the function is decreasing and where it is increasing.



Ans: Local minimum of -4 at $x = -3$, local maximum of 5 at $x = 3$. The function is decreasing on the intervals $(-\infty, -3)$ and $(3, \infty)$ and increasing on the interval $(-3, 3)$.

6. Find all local maximums and minimums of the function $g(x) = x^3 + 7x^2 - 30x$. Round to the nearest 0.1.

Ans: Local minimum of -26 at $x = 1.6$, local maximum of 216.8 at $x = -6.3$.

7. Find the average rate of change from $x = -5$ to $x = 4$ for the function in question 5.

$$\text{Ans: } \frac{4 - (-2)}{4 - (-5)} = 6/9 = 2/3$$

8. Find the average rate of change from $x = 1$ to $x = 1 + h$ for the function in question 6.

$$\text{Ans: } -13 + 10h + h^2$$