Math 140 Test 3 Name_____
Spring, 2007 Version A

Show all necessary work. The test is worth 105 points.

1. (5 points each part) Let $f(x) = 3x^5 + 2x^3 - 7x + 3$.

   a) Find the domain of this function.

   b) Find f(1).

2. (5 points each part) Let $g(x) = \dfrac{3x^2 - 14x - 5}{2x^2 - x - 21}$.

   a) Find the domain of this function.

   b) Find g(2).

3. (5 points each part) Let $h(x) = \sqrt{4 + 5x}$.

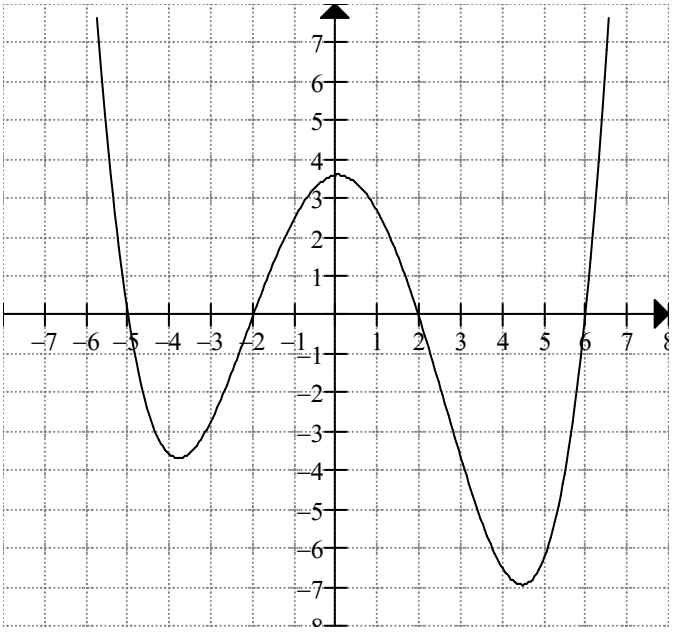
   a) Find the domain of this function.

   b) Find h(12).

4. (5 points each part) Let $F(x) = \begin{cases} 3x^2 + 5 & \text{if } x \le 2 \\ 2x + 1 & \text{if } x > 2 \end{cases}$.

   a) F(2) = _____ b) F(-1) = _____

5. (5 points each part) Given the graph to the right:



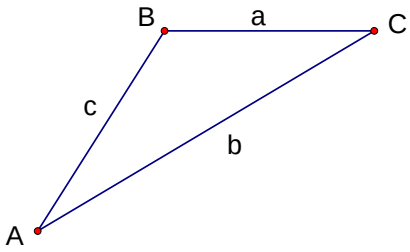
a) List all of the x-intercepts.

b) Estimate the y-intercept.

c) On the graph, label where the graph is increasing and where it is decreasing.

d) On the graph, label the local maxima and the local minima.

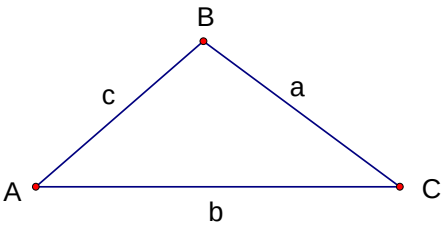
6. (10 points) On the triangle to the right, assume a = 18, c = 12, and $m\angle B = 97°$. Find b.



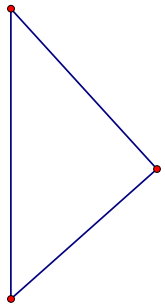
7. On the triangle to the right, assume $m\angle C = 26°$, $m\angle A = 63°$, and b = 29.

a) (5 points) Find $m\angle B$.

b) (10 points) Find a.



8. (10 points) Adamsville is 20 miles directly north of Bakersfield. Carthage is located on a bearing of S 33° E of Adamsville and a bearing of N 48° E of Bakersfield. How far is Carthage from Adamsville? (I have drawn a triangle for you. You need to label it correctly.)



9. (10 points) An investigator walks 50 feet away from a crime scene. A second investigator walks 75 feet away from the crime scene. If the angle between these two investigators is 103°, how far apart are the investigators? (I have drawn the triangle; you need to label it.)