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September 18, 2002. Show all work.

Math 75 – Fall 2002 – PRACTICE Quiz 1 – Warren D. Smith

(This is intentionally somewhat harder than the real test will be.)

1. What is the angle between the two points A, B , as viewed from $(0, 0)$: $A = (5, -2)$, $B = (10, -7)$?
2. Find T so that $13^T = 57$. Express as a logarithm.
3. What is $6 + 8 + 10 + 12 + 14 + \cdots + 998 + 1000$? Re-express this problem using the sum-symbol notation, and also find the answer as an exact number.
4. $\lim_{x \rightarrow \infty} \frac{4x^2 + 3x + 9}{10x^2 + 3x + 5} =$
5. $\lim_{x \rightarrow 0} \frac{x^3 + 5x}{2x} =$
6. $\lim_{x \rightarrow 2048} \log_2 x =$
7. The line thru $(1, 9)$ and $(7, 2)$ has equation $y = ?$ Find the equation of another line parallel to this one? Find the equation of another line perpendicular to this one?
8. $(x - 9)^2 + (y - 5)^2 = 100$ represents a circle. What is its center? What is its radius?
9. The line $x = 2y + 1$ intersects the circle in the last question at what point (or points, or say none if there's none; I want to know both how many points, and what their coordinates are)?
10. Recall the tan addition law $\tan(a + b) = \frac{\tan(a) + \tan(b)}{1 - \tan(a)\tan(b)}$. Now find $\lim_{x \rightarrow \pi/2} \tan(x + y) =$ [Note. Actually there are 2 ways to do this problem, yielding 2 different answers which are equal. So you will have just derived a new trig identity if you find both.]
11. If $F(x) = 7 + \cos(5x - 3)$, then find the function $G(y)$ so F and G are inverse functions. (If there is more than 1 branch, then restrict to one.) Say what the range and domain of your $G(y)$ is. Hint: $\arccos(c)$ has domain $0 \leq c \leq \pi$ and range $-1 \leq \arccos(c) \leq 1$.