

Exam 1b Algebra & Trig 2/28/2003

Each problem is worth 10 points. For full credit provide complete justification for your answers.

1. Simplify $5 - 2[7y - 3y(y - 2)]$.

2. Solve $9 - 5x = 3x + 7$.

3. Rewrite $-3 \leq x < 2$ both in interval notation and on a number line.

4. Simplify $(16x^4y^{-12})^{1/4}$ and write the answer using positive exponents only.

5. Solve $2x - 3y = 16$
 $5x - y = 27$

6. Write $\frac{5-4i}{3+2i}$ in standard form.

7. Solve $|3x - 6| > 5$ and express the solution both with interval notation and on a number line.

8. Solve $\sqrt{x - 1} + 2x = 3$.

9. Buzz is a precalc student at the University of Iowa who's having some trouble. He says "Whoa, man, this math class is kicking my butt. There was this question on our test that was, like, $x^3 + x^2 - 5x + 3$, and we were supposed to tell if it factored like $(x-1)(x-1)(x+3)$ or not. But, like, I never saw in High School how you do ones where there's x^3 in it, so I had no chance at all!"

Explain to Buzz, clearly enough that he can understand, how he could have answered the question even without knowing how to factor a third degree equation.

10. For what values of a and b is the inequality $a + b \leq b - 2a$ true?

Extra Credit (5 points possible): Nemo the cat sleeps two-thirds of the day, and spends the rest of his day either playing, staring out the window, or grooming. He spends one more hour playing than he does grooming, and the amount of time he spends staring out the window is equal to the sum of the times he spends playing and grooming. How long does Nemo spend on each activity?