

**Name:** \_\_\_\_\_

Use of books, notes or calculators is **NOT** permitted. **Show all your work!** Answers without appropriate supporting work may not receive full credit. Clearly indicate your answers to each problem by underlining them or placing a box around your answers!

1. [ **10**] Express the number  $\frac{1}{2} + \frac{1}{\frac{-2}{3} + \frac{1}{4}}$  in simplest form (as an irreducible quotient of two integers).

2. [ **10**] Express as an integer the value of  $\sqrt[3]{9}(3)^{-2/3}$ .

3. [ **20**] Solve the inequality  $x^2 - 2x > 8$ .

4. [ 20] Solve the inequality  $|2x + 3| \leq 5$ .

5. [ 20] For some real number  $\theta$ , it is known that  $\sin(\theta) = \frac{1}{2}$  and  $\cos(\theta) > 0$ . Compute  $\sin 2\theta$ .

6. [ 20] Plot the function  $f(x) = -x^2 + 2x + 8$ .