

Algebra to TMUA

Student questions

Name: _____ Date: _____

Suggested time: 20 minutes. Work without a calculator and show your reasoning. If you get stuck, record what you tried and move on.

This short diagnostic helps choose practice. It is not a TMUA mock or a score predictor.

1. For $x < 3$, simplify $\frac{\sqrt{(x-3)^2}}{x-3}$.

2. Simplify $\frac{x^3 + 27}{x^2 - 9}$, stating all excluded values of x .

3. Solve $\frac{x-1}{x+2} \geq 2$.

4. Find all real x such that $x^2 > 9$ and $x < 1$.

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Continue to show your reasoning. Use extra paper if needed.

5. Solve $|2x - 1| = x + 2$.

6. The graph of a quadratic f opens upwards and has roots -2 and 4 . Given $f(0) < 0$, find all x for which $f(2x - 1) < 0$.

7. A positive real number x satisfies $x + 1/x = 4$. Find $(x - 1/x)^2$.

8. For which values of $k > 0$ does $|x^2 - 4| = k$ have exactly two distinct real solutions?