1. Express $4^4 \cdot 9^4 \cdot 4^9 \cdot 9^9$ in the form $A^B$

2. Express $(4^{-1} - 3^{-1})^{-1}$ in simplest form.

3. Given that $\frac{3}{2} < x < \frac{5}{2}$, find the value of $\sqrt{x^2 - 2x + 1} + \sqrt{x^2 - 6x + 9}$ in terms of $x$.

4. A line $M$ is perpendicular to a line $L$. If the slope of line $L$ is 3 and the line $M$ passes through the point $(3, -1)$, then an equation for the line $M$ is

5. Which of the following equations have two distinct real solutions?
   A: $|x| = 7$; B: $x = \sqrt{25}$; and C: $x^2 + 4x + 14\pi = 0$

6. How many integers $n$ satisfy $|n| < 10\pi$?

7. Find an equation for the line that passes through the points $(1, 2)$ and $(4, -3)$.

8. Factor $2x^2 - 5x - 3$.

9. Simplify $x - 4[2 - 3(x - 5)]$

10. Find an algebraic expression which describes the volume of a cube if the area of each face of the cube is $x$. 