SHOW ALL YOUR WORK.

1. Let \( f(x) = 4x^2 - 2 \). Find and simplify \( \frac{f(x+h)-f(x)}{h} \). Type equation here.

2. Find an equation of the perpendicular bisector of the line segment with endpoints \((6,3)\) and \((-2,5)\).

3. Sketch \( x^2 + y^2 - 8x + 6y + 16 = 0 \) indicating the coordinates of the center and the length of the radius.

4. Solve: \( x^2 - 8x + 12 \geq 0 \).

5. Sketch \( y = -x^2 + 8x - 12 \) indicating the coordinates of the vertex and intercepts.

6. Find all the roots of \( (x) = x^3 + 2x^2 + 4x + 8 \).

7. Sketch \( f(x) = \frac{2x}{x-1} \) indicating intercepts and asymptotes.

8. Solve: \( |1-2x| \leq 5 \).

9. Solve: \( 2^x = \frac{1}{32} \).

10. Let \( f(x) = \frac{1}{x-1} \) and \( g(x) = 3x \). Find \( (f \circ g)(x) \).

11. Sketch \( f(x) = 8x - 32 \) indicating the coordinates of at least 3 points. Find the domain and the range of \( (x) \).

12. Solve for \( x \): \( \log(x + 2) + \log(x - 1) = 1 \).

13. Find the exact value of: a. \( \sin(-270°) \) b. \( \tan\left(\frac{5\pi}{6}\right) \)

14. Find \( \cot(\cos^{-1}\left(-\frac{2}{\sqrt{3}}\right)) \).

15. Find \( \cos(A + B) \) if \( A \) is in the second quadrant, \( B \) is in the first quadrant, \( \sin A = \frac{2}{3} \) and \( \cos B = \frac{3}{5} \).

16. Sketch \( \frac{(x-3)^2}{9} - \frac{(y+4)^2}{16} = 1 \) indicating the center, vertices, foci and asymptotes.