Algebra 2 : Are you ready ?

1/. Compute

(1) $-2.5 \times (-3 + 100\%) + \dfrac{10}{\frac{1}{2} + \frac{1}{3}}$

(2) $1 - \dfrac{(\sqrt{2})^4}{16} \div \dfrac{2}{3}$

2/. Simplify

(1) $2x - 1 - 3(2 - 3x) + 10(1 - x)$

(2) $(2x+1)(3x-4)$

(3) $4a^2b \cdot b^3 + 2(ab^2)^2 - \dfrac{3a^2b^5}{b^2} + \dfrac{3ab}{a^{-1}b^{-2}}$

(4) $\dfrac{1}{\frac{1}{a} + \frac{1}{b}}$

3/. Evaluate

(1) $x = 1$: $|2 - 4x| + x^2 - \dfrac{4}{x+1} = ?$

(2) $x = 2$: $\sqrt{2x + 12} - \sqrt[3]{x + 6} = ?$

4/. Factorize

(1) $a^2 - b^2$

(2) $2x^2 - 5x - 3$

(3) $x^2y^2 - 2xy^2 + y^2$

(4) $x^3 - 8$

5/. Solve equations

(1) $|1-3x| = 2$

(2) $1-3x^2 = x^2 - 2$

(3) $2x^2 + x - 5 = 0$

(4) $x^2 + x - 1 = 0$

(5) $\sqrt{x+2} - x = 1$

(6) $\begin{cases} 2x - 3y = 1 \\ 3x + 2y = 8 \end{cases}$

6/. Solve inequalities

(1) $-2x + 1 < 2$

(2) $x^2 - 4 \geq 0$

7/. Functions

(1) Sketh the graph of $f(x) = |x-1|$

(2) Find the domain of $f(x) = \frac{1}{x^2+x}$

(3) $f(x) = 2f(x-1)$ for all integer x.
If $f(n) = 3$ for an integer n,
find $f(n-1) \cdot f(n+1)$

8/. Ratio

The ratio of male to female students in the algebra class is 3 : 4. The total number of students in the class is 63. How many female students are there in the class ?

9/. Rate

John's speed was 1 m/s to walk from his home to Peter's. His speed was 0.8 m/s to come back. If the distance from John's home to Peter's is 1000 meters. What is his average speed of the whole trip ?