3pts 1. If A = {10, 30, 45, 60, 65} and B = {10, 20, 30, 45, 55} find A $\cup$ B

3pts 2. Rewrite the expression below in a form that does not use absolute values

$|x - 4| + |x - 3|$ if $x > 4$

3pts 3. Simplify using positive exponents: $\dfrac{\left(x^3y^4z^5\right)^2}{x^4y^3z^2} \div \dfrac{x^2z^3}{y^5}$

3pts 4. Write the following in scientific notation and show your work: $(4.20 \times 10^{15})(5.10 \times 10^{-8})$

3pts 5. Simplify the following: $\sqrt[3]{4x^4y^{15}z^{-4}} \ \sqrt[3]{2x^8y^{-3}z^{13}}$

3pts 6. Rationalize the denominator and simplify: $\dfrac{2x}{\sqrt[3]{5x^2y^7}}$

3pts 7. Perform the indicated operation and simplify: $(x + 3)(x^2 - 3x + 9)$

4pts 8. Factor by grouping: $x^2 + 9x - a^2 - 9a$

4pts 9. Factor completely: $x^2 - 3x - 18$

4pts 10. Factor completely: $2x^3y^2 + 250y^2$

4pts 11. Simplify : $\dfrac{\left(\dfrac{x^2 + 6x + 5}{x^2 - 1}\right)}{\left(\dfrac{x^2 + 7x + 10}{x^2 + 4x - 5}\right)}$

4pts 12. Solve: $\dfrac{3}{x - 2} + \dfrac{1}{x + 1}$

4pts 13. Solve: $\left|\dfrac{4x - 1}{3}\right| = 2$

4pts 14. Solve for μ: $Z = \dfrac{x - \mu}{\sigma}$

4pts 15. Solve $3x^2 + 5x - 2 = 0$ by using the quadratic formula

4pts 16. Solve: $\dfrac{4}{x} + \dfrac{3}{x - 1} = 5$

4pts   17. Solve $\sqrt{x-5} + 2 = x - 3$

4pts   18. A rectangular garden is three times as long as it is wide. Find its dimensions if the total area
    is 192 square yards.

4pts   19. A change purse contains 17 coins worth a total of $2.50. The coins are all quarters, nickels,
    or dimes. The number of nickels and dimes are equal. There are two more quarters than
    nickels. How many of each type of coin are in the change purse?

4pts   20. Specify the solutions for the following in interval notation: $\dfrac{x+2}{3} - \dfrac{x}{4} \geq 1$

4pts 21. Solve using the critical point method (write solution with interval notation)

$$\frac{x^2 + 4x + 3}{x - 2} \leq 0$$

5pts   22. Find the equation of the circle with center (11, -1) and a point on the circle (17, -9).

4pts 23. Graph $5x + 2y = 10$

5pts 24. Graph $y = x^3$ and determine if there is any symmetry (x, y, origin). Explain algebraically why
        this is so.

4pts 25. Find the equation of the line through (2, 5) that is parallel to $2x - 3y = 4$.

5pts. 26. Water freezes at $0°$ Celsius or $32°$ Fahrenheit. It boils at $100°$ Celsius or $212°$ Fahrenheit.
        Use this information to determine the linear equation that will convert Celsius
        temperature to Fahrenheit.

Some formulas you may need

1. $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

2. $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

3. $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

4. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

5. $\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$

6. $m_1 = m_2$

7. $y - y_1 = m(x - x_1)$

8. $(x - h)^2 + (y - k)^2 = r^2$

9. $y - y_1 = m(x - x_1)$

10. $y = mx + b$

11. $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

12. $m_1 = \dfrac{-1}{m_2}$