

4pts 1. Evaluate $(5x - 7)^2 + 3x + 7$ when $x = 2$

4pts 2. Write in roster form $A = \{x/x \text{ is a whole number less than nine}\}$

4pts 3. Evaluate $|27 - 35| + |5|$

5pts 4. Simplify using positive exponents

$$\frac{x^{24}y^{21}z^{12}}{(x^5y^6z^3)^4} \div \frac{y^{11}z^{-15}}{x^6}$$

4pts 5. Write the following in scientific notation: 5,321,000

4pts 6. Simplify the following: $\sqrt{\frac{16}{25}}$

5pts 7. Simplify the following: $\sqrt[3]{x^8y^{10}z^{-6}} \sqrt[3]{x^{10}y^5z^{30}}$

6pts 8. Evaluate the following (3pts each)

a) $16^{3/4}$

b) $125^{2/3}$

4pts 9. Rationalize the denominator and simplify $\frac{11x}{\sqrt{10} - \sqrt{3}}$

4pts 10. Simplify $(7x^4 + 5x^2)(8x^3 + 9x - 4)$

8 pts 11. Factor completely (4pts each)

a) $3x^8 - 192x^5$

b) $16x^4 - 256$

5pts 12. Simplify: $\frac{\left(\frac{x^2 - 8x + 12}{x^2 - 36}\right)}{\left(\frac{x^2 - 2x - 8}{x^2 + 11x + 30}\right)}$

4pts 13. Solve $5(3x - 7) + 2x = 8x + 1$

4pts 14. Solve: $\left|\frac{2x - 3}{5}\right| = 7$

4pts 15. Solve $2x^2 + 7x = 15$ by factoring

4pts 16. Solve $10x^2 - 33x - 7 = 0$ by using the quadratic formula

5pts 17. Solve $\sqrt{x-3} + 4 = x - 1$

5pts 18. Find the dimensions of the rectangle with area 143 square feet if the width is 2 feet less than the length.

5pts 19. A 26 foot ladder leans against a building. If the base of the ladder is 24 feet away from the building how high up the building does the ladder reach?

12pts 20. Specify the solutions for the following in interval notation (4pts each)

a) $-3x + 7 > 28$

b) $|3x - 5| \leq 13$

c) $\frac{2x}{3} - \frac{x-6}{5} \leq 4$

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

4. $c^2 = a^2 + b^2$