

All answers should be exact. Reduce, where possible. Answers should be in the space to the left of the question.

_____ 1. Rewrite as a simplified radical with a reduced index. $\sqrt[6]{(x+1)^4}$

_____ 2. Completely factor the expression and simplify each factor. $2x(x-5)^4 + x^2(4)(x-5)^3$

_____ 3. Simplify. $8\sqrt[3]{27x} - \frac{1}{2}\sqrt[3]{64x}$

_____ 4. Simplify. $\frac{(x-4)}{\left(\frac{x}{4} - \frac{4}{x}\right)}$

_____ 5. Write the equation of line with x-intercept $(-6, 0)$ and perpendicular to the line $4x - 5y = 10$.
The answer should be in the form $y = mx + b$.

_____ 6. State the vertex of the parabola represented by the following equation. $y = 2x^2 - 16x + 31$

_____ 7. Find all real zeros of the following polynomial function. $f(x) = 3x^3 - 7x^2 - 4x + 2$

_____ 8. Solve the inequality. $10 < 18 - 6|x + 2|$

_____ 9. A company manufactures and sells personalized stationery. The weekly fixed cost is \$3000 and it costs \$3.00 to produce each package of stationery. The selling price is \$5.50 per package. How many packages of stationery must be produced and sold each week for the company to generate a profit?

_____ 10. Simplify the expression with no negative exponents in the answer. $\left(\frac{x^4 y^5 z^6}{x^{-4} y^{-5} z^{-6}}\right)^{-2}$

_____ 11. Find all real and imaginary solutions. $8x^3 - 125 = 0$

_____ 12. Simplify. $(2 - 3i)^2(2 + 3i)$