

Name: _____

1. Simplify each expression. (12 points)

(a). $(-2x)^3 x^2$

(d). $(2 + x^2)^0$

(b). $\frac{3y^4}{y^2}$

(e). $\frac{x^2 x^n}{x^3 x^n}$

(c). $\frac{8(x + y)^4}{(x + y)}$

(f). $\sqrt{4x^2}$

2. Write each expression using scientific notation. (4 points)

(a). 9,461,000,000,000

(b). 0.00003937

3. Evaluate each expression. (8 points)

(a). $\sqrt[3]{-8}$

(b). $36^{3/2}$

(c). $\sqrt[6]{563^6}$

(d). $\left(\frac{1}{8}\right)^{-1/3}$

4. Use your calculator to estimate each number, rounding your answer to three decimal places. (4 points)

(a). $\sqrt{23}$

(b). $\sqrt[3]{45^2}$

5. Simplify each expression by rationalizing the denominator. (4 points)

(a). $\frac{2}{\sqrt{3}}$

(b). $\frac{2}{\sqrt{3}+1}$

6. Consider the polynomial $3x - 2 + 7x^4 + 3x^2$. (9 points)

(a). Write the polynomial in standard form.

(b). What is the degree of the polynomial?

(c). What is the leading coefficient?

7. Perform the indicated operations and write the result in standard form. (9 points)

(a). $(2x^2 + x + 1)(3x + 5)$

(b). $(2x^2 + 1) - (x^2 - 2x + 1)$

(c). $(3x - 1)^2$

8. Factor by removing all common factors. (15 points)

(a). $4x + 6$

(b). $4x^3 - 6x^2 + 12x$

(c). $(x - 2)^2 + 3(x - 2)$

9. Factor each trinomial. (20 points)

(a). $x^2 + 4x + 4$

(b). $z^2 - z - 6$

(c). $2x^2 - x - 1$

(d). $9w^2 - 4$

10. Completely factor each expression. (15 points)

(a). $x^3 + 5x^2 - 5x - 25$ (Hint: use grouping)

(b). $12x^2 - 48$

(c). $(t - 1)^2 - 49$