

Instructions:

Complete all questions in the order they appear on your own paper. Be sure to show all workings - failure to do so will result in a loss of marks. Organize your work and indicate your final answer by circling or highlighting it. Remember to always reduce your fractional answers to lowest terms. When you scan the assignment for submission, be sure to check the final scanned file to ensure that it is complete and readable. Please check the instructions on the course site for complete instructions for submission of assignments. If you have any questions post them under the Unit 5 discussion page so that they can be addressed.

1. Simplify using the laws of exponents.

a. $x^3 \cdot x^5$

b. $\frac{t^{11}}{t^7}$

c. $\frac{m^3 \cdot m^4}{m^5}$

d. $(k^2)^4$

e. $\frac{x^{\frac{5}{2}} \cdot x^{-\frac{3}{2}}}{x^3}$

f. $(3x^2y)(3xy^2)$

g. $(y^{\frac{1}{2}} \cdot y^{\frac{3}{2}})^{-2}$

h. $\left(\frac{1}{4}y^2\right)^{-2}$

i. $\left(\frac{k^3 \cdot k^8}{k^7}\right)^0$

j. $\left(\frac{-2xy^2z^0}{y^4}\right)\left(\frac{1}{xz^2}\right)^3$

2. Convert each number from standard form to scientific notation.

a. 124 000 000

b. 0.000 0000 000 378

c. -324 000

3. Convert each number from scientific notation to standard form.

a. -4.55×10^{-6}

b. 4.993×10^5

4. What is the degree of each of the following polynomials?

a. $5x^4 + 3x^2 + 1$

b. $6xy^2z^4 + 5xyz - 10x$

c. 18

5. Simplify.

a. $(4x^2 - 3x - 2) + (-7x^2 + 2)$

b. $(2x^2 - 3x + 2) - (3x^2 + 8x + 12)$

c. $(2xy^2 - 3xy + y) - (-5xy - 3y)$

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

e. $(x - 3)(x + 2)$

f. $(-3x + 2y)(4x - 3y)$

g. $(x^2 - 2x + 1)(x - 3)$

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

i. $(5x - 1)(5x + 1)$

j. $(\frac{1}{3}y + \frac{2}{5}x)(\frac{1}{4}y + \frac{1}{2}x)$

6. Divide using long division.

a. $(x^2 - 2x - 8) \div (x - 4)$

b. $(-3x^2 - 29x - 18) \div (-3x - 2)$

c. $(11x^2 + 4x - 9) \div (x - 1)$

d. $(x^4 - 5x^3 + x - 5) \div (x - 5)$

e. $(x^4 - x^2 - 12) \div (x^2 + 3)$

f. $(6x^3 - 3x^2 + 4) \div (2x + 1)$

7. Repeat question 6 using synthetic division, where possible.