

Math 172–Assignment # 4

Name: _____

1. Perform the following computation and write your answer in scientific notation.

$$\frac{(1.5 \times 10^{-12})(3 \times 10^{15})}{5 \times 10^{45}} \quad \underline{\hspace{2cm}}$$

2. Simplify each expression. Assume all variables represent nonzero real numbers. Write your answer with positive exponents.

a) $\frac{21y^{-5}z^{-3}}{-3xy^7z^{-7}}$ _____

b) $\left(\frac{-3x^{-2}y}{2xy^2}\right)^{-4}$ _____

c) $\left(-\frac{8a^{-8}b^2}{3b^{-5}}\right)^{-1}$ _____

d) $\left(\frac{7^{q-7}}{7^{3-4q}}\right)^2$ _____

3. Simplify.

a) $\frac{3^{-1}-9^{-1}}{18^{-1}}$

b) $(1+2^{-2})^{-1}$

4. Factor each polynomial completely.

a) $9x^3y-6x^2y+xy$

b) $3p^2+8pq-3q^2$

c) $81r^3-3t^3$

d) t^2+7t-5

e) $x^2y^2+4y^2-x^2-4$

f) $16m^{2m}-24m^m+9$

g) $a^5-a^3+a^2-1$

5. Multiply out the following expressions.

a) $(x+5)(x^2-2x+10)$

b) $(3x-4y)(x+6)$

c) $(a^x+b^{2y})^2$

6. Solve the following equations.

a) $y^3 + 3y^2 - 40y = 0$

b) $(d^2 - 1)^2 - 11(d^2 - 1) + 24 = 0$

c) $|x^2 - 2x - 16| = 8$

7. Find all sets of three consecutive integers such that the sum of their squares is 50.

8. You are designing a new swimming pool for Saanich Commonwealth Place. This rectangular pool is required to have a diagonal that is 10 metres long. You want the width of the pool to be 2 metres less than the length. Find the perimeter of the pool.