

*Unit 1 : Algebra Skills**Topic: Algebra Skills Review**Objective: SWBAT review the topics covered in this unit by completing various problems.***NO CALCULATOR ALLOWED***Directions: Read each question carefully and SHOW ALL WORK!*

1) Simplify each of the following:

a)  $\left(\frac{2x^{-4}y^3}{8xz^2}\right)^{-2}$

b)  $x^2 - (x + 5)(x - 3) - (2 - x)^2$

c)  $(x^{-2} + x^3)(6 - 2x)$

d)  $\frac{(9x + 1)^2}{3x}$

e)  $\frac{16x^{2/3}y^{-1/3}}{48x^{-4/3}y^2}$

f)  $\left(-\frac{5}{x}\right)^2 \left(\frac{2}{x}\right)^5$

2) Multiply:

a)  $(-x^{\frac{2}{3}}y^2)(3x^{\frac{1}{2}}y^{-\frac{4}{5}})$

b)  $\sqrt[5]{x}(2x^2 + 6\sqrt{x})$

3) Factor each of the following completely:

a)  $x^3(3x - 2)^4 - 4(3x - 2)^5$

b)  $27x^3 + 64y^6$

c)  $6a^2 - ay - 2y^2$

d)  $18x^8y - 15y^3$

4) Simplify each of the following:

a) 
$$\frac{\frac{4}{x} - \frac{8}{x^2}}{1 - \frac{2}{x}}$$

b) 
$$\frac{\frac{1}{x} + \frac{7}{x+1}}{\frac{1}{x^2 - 1}}$$

4) Find the partial fraction decomposition for :  $\frac{1-x}{2x^2+x}$

6) Find the partial fraction decomposition for:  $\frac{x^3+x^2+2x-2}{x^2-1}$

7) Find the partial fraction decomposition for:  $\frac{5x+4}{x^2+x-20}$

