

Entrance to Grade 12 Mathematics for College Technology (MCT4C)

Scrap paper is available but write your final solution clearly in the space provided

1. Mary saved \$2500 from her summer job and invested it at 4% per annum compounded monthly. How much will she have four years later when she attends college?

2. Solve each of the following:

a. $3^x + 6 = 87$

c. $4^{x+1} - 22 = 42$

b. $5(2^x) - 160 = 0$

d. $\frac{3^{x-1}}{6} = \frac{81}{2}$

3. Simplify each of the following:

a. $(x^2 + 3x - 4) - (x - 1)^2$

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

b. $2(x + 3)(x - 1)$

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

4. State any restrictions on the variable in each of the following:

a. $\frac{3x + 7}{7}$

c. $\frac{2x^2 + 5x - 9}{x - 5}$

b. $\frac{4y - 5}{y^2 - 7y + 12}$

d. $\frac{y + 7}{y^2 + 2y - 15}$

5. Simplify each of the following:

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

c. $(4xy^2)^{\frac{1}{2}}(9x^3y^4)^{\frac{1}{2}}$

b. $(2x^2y)^3(3x^2y^4)^{-2}$

d. $\frac{3x^2y^4}{15(xy^2)^3}$

6. Solve each of the following for x .

a. $x^2 + 81 = 0$

c. $x^2 + 15 = -12$

b. $3(x-3)^2 = x^2 - 3$

d. $(x+2)(x+5) = (x-4)^2$

7. Convert the following to radian measure.

a. 330°

b. 48°

c. -510°

8. Simplify each of the following:

a. $\frac{m^{2a+3} \cdot m^{a-2}}{m^{a+1} \cdot m^{a-1}}$

b. $\sqrt{\frac{a^{\frac{1}{4}} \cdot a^{\frac{1}{2}}}{\sqrt{a}}}$