

Name: Tang Ming Foo

Matrks No: Q5IPP18F1002

Course: PBM 1035 Intensive Mathematics

Programme: IPP1

course work: Test 1

$$\frac{17\frac{1}{2}}{20} = 18\frac{1}{2}$$

Question 1

(a) Simplify the following polynomials.

(i) $(5b^2 - 3b + 1) - (2b^2 + 4b)$

$$= 5b^2 - 3b + 1 - 2b^2 - 4b$$

$$= 5b^2 - 2b^2 - 3b - 4b + 1$$

$$= 3b^2 - 7b + 1$$

(ii) $(-2x^3 + 5xy) 3xy$

$$= -6x^4y + 15x^2y^2$$

$$\frac{2nortoups}{pnwollor} = \frac{2}{2} = 1$$

(iii) $-x^3y^2z \div y^2zx^2$

$$= \frac{-x^3y^2z}{x^2y^2z} \times \frac{1}{x^2y^2z} = \frac{-x^3y^2z}{x^2y^2z} \times \frac{1}{x^2y^2z}$$

$$= -x$$

(b) Express the operations by using BODMAS's Rule.

(i) $32 \div 5 (4 + 4)$

$$= 32 \div 5 \times (8)$$

$$= 6.4 (8)$$

$$= 0.8$$

$$\begin{array}{r} 6.4 \\ 5 \overline{) 32.0} \\ \underline{30} \\ 20 \\ \underline{20} \\ 0 \\ \underline{0} \\ 0 \end{array}$$

(ii) $2 + 21 \div 7$

$$= 2 + (21 \div 7)$$

$$= 2 + 3$$

$$= 5$$

Question 2

(a) Make x as the subject in each case:

(i) $-2(x + a) = 2b$

$$-2x - 2a = 2b$$

$$-2x - 2a + 2a = 2b + 2a$$

$$\frac{-2x}{-2} = \frac{2a + 2b}{-2}$$

$$x = -a - b$$

(ii) $\frac{1}{2}x - 3a = 4b$

$$\frac{1}{2}x - 3a + 3a = 4b + 3a$$

$$\frac{1}{2} \times 2x = (4b + 3a) \times 2$$

$$x = 8b + 6a$$

(b) Solve the following equations.

(i) $\frac{5}{x+6} = \frac{2}{2x+6}$

$$\frac{5}{x+6} = \frac{2}{2x+6}$$

$$5(2x+6) = 2(x+6)$$

$$10x + 30 = 2x + 12$$

$$10x - 2x + 30 - 30 = 2x - 2x + 12 - 30$$

$$10x - 2x = 12 - 30$$

$$8x = -18$$

$$\frac{8x}{8} = \frac{-18}{8} \Rightarrow x = -\frac{9}{4}$$

(ii) $y^2 = -5y - 4$

$$y^2 + 5y + 4 = -5y + 5y - 4 + 4$$

$$y^2 + 5y + 4 = 0$$

$$\begin{matrix} A & B & C \\ 1 & 5 & 4 \end{matrix}$$

$$= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-5 \pm \sqrt{(5)^2 - 4(1)(4)}}{2(1)}$$

$$= \frac{-5 \pm \sqrt{25 - 16}}{2}$$

$$= \frac{-5 \pm \sqrt{9}}{2}$$

$$= \frac{-5 \pm 3}{2}$$

(iii) $x^2 - 16x + 4 = 0$ by using the quadratic formula

$$\begin{matrix} A & B & C \\ 1 & -16 & 4 \end{matrix}$$

$$= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-(-16) \pm \sqrt{(-16)^2 - 4(1)(4)}}{2(1)}$$

$$= \frac{16 \pm \sqrt{256 - 16}}{2}$$

$$= \frac{16 \pm 15.5}{2}$$

$$= \frac{16 + 15.5}{2} \text{ or } \frac{16 - 15.5}{2}$$

$$= \frac{15.75}{2} \text{ or } \frac{0.25}{2}$$

$$= 15.75 \text{ or } 0.25$$

$$= \frac{-5 + 3}{2},$$

$$\frac{-5 - 3}{2}$$

$$= \frac{-2}{2},$$

$$\frac{-8}{2},$$

$$= -1, -4$$