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Matricks No: Q5IPP18F1002

Course: PBM 1035 Intensive Mathematics

Programme: IPP1

course work: Test 1

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

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

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

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

$$= -x$$

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

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

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

$$= 6.4 (8)$$

$$= 0.8$$

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

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

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

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

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

$$8x = 12 - 30$$

$$8x = -18$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$= -1, -4$$

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

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

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

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

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

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

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

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

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

Question 1 [CLO1, C1, -C3]

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

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

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

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

2

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

$$= \frac{-2x^3 + 5xy}{3xy}$$

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

X

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

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

$$= -x$$

2

Question 2 [CLO1, C2]

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

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

$$= 32 \div 40$$

$$= 0.8 \quad 1 \frac{4}{5}$$

2

ii) $2 + 21 \div 7$

$$= 2 + 3$$

$$= 5$$

2

Question 2 [C101, C2]

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

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

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

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

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

$$x = -b - a$$

$$x = -b - a$$

[C101, C1-C3]

$$b) i) \frac{5}{x+b} \times \frac{2}{2x+b}$$

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

=

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

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

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

$$10x = 2x - 18$$

$$10x - 2x = 2x - 2x - 18$$

$$\frac{8x}{8} = \frac{-18}{8}$$

$$x = -9/4$$

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

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

$$y = \sqrt{-5y - 4}$$

$$y + 5y = \sqrt{-4}$$

$$6y = \sqrt{-4}$$

$$y = \frac{\sqrt{-4}}{6}$$

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

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

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

$$x = 8b + 6a$$

$$1 \quad x^2 - 16x + 4 = 0$$

$$a = 1 \quad b = -16 \quad c = 4$$

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

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

$$= \frac{16 \pm \sqrt{240}}{2}$$

$$= \frac{16 + 15.492}{2}$$

$$= \frac{31.492}{2}$$

$$= 15.746$$

$$\text{or } = \frac{16 - 15.492}{2}$$

$$= \frac{0.508}{2}$$

$$= 0.254$$



Question 1

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

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

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

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

✓ (2)

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

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

✓ (2)

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

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

$$= -x$$

✓ (2)

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

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

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

$$= 64 \times 8$$

$$= 512$$

✗

$$\begin{array}{r} 64 \\ 5 \overline{) 320} \\ \underline{30} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

$$\begin{array}{r} 64 \\ \times 8 \\ \hline 512 \end{array}$$

~~$$1) \frac{1}{2} \times 3a = 4$$~~

ii) $2 + 21 \div 7$

$$= 2 + 3$$

✗ 5

✓ (2)

Question 2

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

~~x~~

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

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

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

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

✓ (2)

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

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

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

$$x = 2(4b+3a)$$

$$x = 8b + 6a$$

✓ (2)

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

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

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

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

$$8x + 30 = 12$$

$$8x + 30 - 30 = 12 - 30$$

$$\frac{8x}{8} = \frac{-18}{8}$$

$$x = -\frac{18}{8}$$

✓ (2)

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

$$\sqrt{y^2} = \sqrt{-5y-4}$$

$$y = \sqrt{-5y-4}$$

iii

$$x^2 - 16x + 4 = 0$$

a b c

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

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

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

$$= \frac{16 \pm \sqrt{240}}{2}$$



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

$$= \frac{16 + 15.5}{2} \quad \text{or} \quad \frac{16 - 15.5}{2} = \frac{0.5}{2} = 0.25$$

$$= 15.75 \quad \text{or} \quad 0.5 = \frac{1}{2}$$



Question 1

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

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

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

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

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

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

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

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

$$= 32 \div 40$$

$$= 0.8$$

$$ii) 2 + 21 \div 7$$

$$= 2 + 3$$

$$= 5$$

$$\begin{array}{r} 10 \div 2 = 5 \\ 40 \overline{) 320} \\ \underline{0} \\ 320 \\ \underline{320} \\ 0 \end{array}$$

$$\begin{array}{r} 40 \\ \times 8 \\ \hline 320 \end{array}$$

$$\begin{array}{r} 3 \\ 7 \overline{) 21} \\ \underline{21} \\ 0 \end{array}$$

Question 2

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

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

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

$$\begin{array}{r} -2x = 2b + 2a \\ \underline{-2} \end{array}$$

$$x = -b - a$$

$$x = -b - a$$

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

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

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

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

$$x = 4b + 3a \times 2$$

$$x = 4b + 6a$$

Question 2

Question 2.

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

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

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

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

$$12x+42=0$$

$$12x+42-42=0-42$$

$$\frac{12x}{12} = \frac{-42}{12}$$

$$x = -3.5$$

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

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

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

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

$$a=1 \quad b=5 \quad c=4$$

$$(x+4)(x+1) = 0$$

$$\boxed{1 \times 4} - 2 \times 2$$

$$(x+4)(x+1) = 0$$

iii) $x^2 - 16x + 4 = 0$

$$a=1 \quad b=-16 \quad c=4$$

$$(x-7)(x-7) = 0$$

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

$$2a$$

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

$$2(1)$$

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

$$2$$

$$x = \frac{-16 \pm \sqrt{-272}}{2}$$

$$2$$

$$x = \frac{-16 \pm \sqrt{-272}}{2}$$

$$x = \frac{-16 \pm \sqrt{-272}}{2}$$

iii) $x^2 - 16x + 4 = 0$

$$a = 1 \quad b = -16 \quad c = 4$$

$$(x-7)(x-7) = 0$$

$$4$$

$$\frac{1 \times 4}{2 \times 2}$$

Incorrect

Question 2

$$\text{iii) } x^2 - 16x + 4 = 0$$

$$a = 1 \quad b = -16 \quad c = 4$$

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

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

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

$$x = \frac{-(-16) \pm \sqrt{272}}{2}$$

$$x = \frac{-(-16) \pm 16.5}{2}$$

$$x = \frac{-32.5}{2}$$

$$x = \frac{-32.5}{2}$$

Question 1

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

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

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

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

(2)

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

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

(2)

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

$\frac{-x^2y^2z}{y^2zx^2}$

$= -x$

(2)

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

$= 32 \div 5 + 8$

$= 6.4 + 8$

$= 14.4$

(ii) $2 + 2 \div 7$

$= 2 + 3$

$= 5$

(2)

11 + 2
20

$dp = 0.5 - x \frac{1}{5}$

$0.5 + dp = 0.5 - 0.5 - x \frac{1}{5}$

$x \frac{1}{5} = 0.5 - 0.5 - dp$

$x = 0.5 - 0.5 - dp$

$\frac{5}{5} = \frac{7}{5}$

$(2+5)5 = (2+5)5$

$10x + 80 = 0.5 + x \frac{1}{5}$

$10x + 80 - 5x = 0.5 - 0.5 + x \frac{1}{5}$

$5x + 80 - 5x = 15 - 15$

$0 = 15 - 15 - 0.5 + x \frac{1}{5}$

$0 = 15 - 15 - 0.5 + x \frac{1}{5}$

$0 = 15 - 15 - 0.5 + x \frac{1}{5}$

$0 = 15 + 5.9$

Question 2

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

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

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

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

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

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

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

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

$$x = (4b + 3a) \times 2$$

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

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

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

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

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

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

$$10x + 30 - 2x - 12 = 0$$

$$10x - 2x + 30 - 12 = 0$$

$$8x + 18 = 0$$

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

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

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

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

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

$$x^2 - 16x + 4 = 0$$

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

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

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

$$\frac{16 \pm \sqrt{240}}{2}$$

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

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

$$= 15.75$$

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

$$= 0.25$$



Question 1 (a)

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

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

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

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

$\frac{9}{20} \times 2$

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

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

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

(2)

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

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

$= \frac{-x^3}{x^2}$

$(1\frac{1}{2})$
Simplify

Question 1 (b)

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

$= 32 \div 20 + 20$

$= 32 \div 40$

$= 0.8$

(4)

ii) $2 + 21 \div 7$

$= 3 + 2$

$\frac{3}{7} \frac{21}{21}$

$= 5$

Question 2 (a)

$$\begin{aligned} -2(x+a) &= 2b \\ -2x - 2a &= 2b \\ -2x - 2a + 2a &= 2b + 2a \\ -2x &= 2b + 2a \\ \frac{-2x}{-2} &= \frac{2b + 2a}{-2} \\ x &= \frac{4ab}{-2} \end{aligned}$$

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

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

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

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

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

Question 2 (b)

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

$$= \frac{10x + 30}{2x + 12}$$

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

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

$$a=1, b=5, c=4$$

$$AC = 1 \times 4$$

$$= 4$$

$$(y+4)(y+1) = 0$$

incomplete

$$iii) x^2 - 16x + 4 = 0$$

$$a=1, b=16, c=4$$

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

$$= \frac{16 \pm \sqrt{256 - 4(1)(4)}}{2(1)}$$

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

$$= \frac{16 \pm 16 - 14}{2}$$

$$= -7$$

Question 1

$$(1a i) (5b^2 - 3b + \frac{1}{2}) - (2b^2 + 4b)$$

$$= 5b^2 + 2b^2 + 3b + 4b + \frac{1}{2} + 2b^2$$

$$= 5b^2 + 2b^2 = 2b^2 - 2b^2$$

$$= 5b^2 + 2b^2 = 7b^2$$

$$(1a ii) (-2x^2 + 5xy) 3xy$$

$$= -2x^2 + 5xy - 3xy$$

$$= -2x^2 + 2xy$$

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

$$\frac{-x^3 y^2}{y^2 2x^2}$$

$$=$$

Question b

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

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

$$= 6.4(8)$$

$$= 51.2$$

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

$$= 2 + 3$$

$$= 5$$

Question 2

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

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

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

$$= \frac{-2x}{-2} = \frac{2ab}{-2}$$

$$= -4$$

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

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

$$= \frac{1}{2}x - 3a (-2 \cdot 5) = 4b - 4b$$

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

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

$$= 2 \cdot 5(x) + 6 \div 2x + 6$$

$$= 6 \div 6 (1) 2x + 1$$

$$= 1 + 3x = 4$$

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

$$y^2 + 14 = -5y - 4 + 4$$

$$\frac{y^2 + 14}{5} = \frac{-5y}{-5}$$

$$y = \frac{y^2 + 14}{5}$$

$$(iii) x^2 - 16x + 4 = 0$$

$$= x^2 - 16x + 4 = 0$$

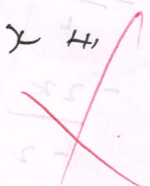
$$= x^2 - 16x + 4 - 4 = 0 - 4$$

$$= x^2 - 16x + 4(-12) = 0 - 4$$

$$= x^2 + 12 + 12 = 0$$

$$\Rightarrow x^2 = -24$$

$$= x^2 = -4 + 16x + 4$$



$$(i) \frac{1}{5}x - 30 = 40$$

$$\frac{1}{5}x - 30 = 40$$

$$\frac{1}{5}x - 30 = 40$$

$$\frac{1}{5}x - 30 = 40$$

$$\frac{1}{5}x - 30 = 40$$

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Question 1

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

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

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

$= 3b^2 + b + 1$

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

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

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

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

$x = x^2$

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

$= 32 \div 5 + 20 + 20$

$= \frac{32}{5} + 40$

$= 14.4$

ii) $2 + 21 \div 7$

$= 3 + 2$

$= 5$

Question 2

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

$-2x - 2a = 2b$

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

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

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

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

$\frac{1}{2}x \times 2 = 7 \times 2$

$x = 14$

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

$10x + 30 = 12 + 2$

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

$\frac{10x}{10} = \frac{-16}{10}$

$x = \frac{-16}{10}$

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

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

$a = 1, b = 5, c = 4$

$1 \times 4 = 4$

1×4

2×2

$(x+4)(x+1) = 0$

x^2

incomplete

iii) $x^2 - 16x + 4 = 0$

$a = 1, b = 16, c = 4$

$a \times c$

$1 \times 4 = 4$

1×4

2×2

$(x+2)(x-2) = 0$

Question 1

$$\begin{aligned} a) & (5b^2 - 3b + 1) - (2b^2 + 4b) \\ &= 5b^2 - 3b + 1 - 2b^2 + 4b \\ &= 5b^2 + 4b - 3b - 2b^2 + 1 \\ &= 9b - 5 + 1 \\ &= 4b + 1 \end{aligned}$$

$$\begin{aligned} b) & (-2x^3 + 5xy) 3xy \\ &= -6x^3 + 15xy \end{aligned}$$

$$\begin{aligned} iii) & -x^3y^2z \div y^2zx^2 \\ &= -x^3y^2z \div y^2zx^2 \\ &= -xy^2 \end{aligned}$$

Question

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

$$\begin{aligned} & 32 \div 5(4+4) \\ &= 32 \div 20 + 20 \\ &= 32 \div 40 \\ &= 0.8 \end{aligned}$$

$$\begin{array}{r} 32 \overline{) 40} \\ \underline{+20} \\ 40 \end{array}$$

$$\begin{array}{r} 32 \overline{) 40} \\ \underline{-32} \\ 8 \end{array}$$

$$ii) 2 + 21 \div 7$$

$$\begin{aligned} &= 21 \div 7 = 3 \\ &= 2 + 3 \\ &= 5 \end{aligned}$$

$$\begin{array}{r} 3 \\ 7 \overline{) 21} \\ \underline{21} \\ 0 \end{array}$$

$$\frac{+3}{5}$$

Question 2

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

$$\begin{aligned} -2(x+a) &= 2b \\ -2x - 2a &= 2b \\ -2x - 2a + 2a &= 2b - 2a \\ -2x &= 2b - 2a \\ -2x &= 2b - 2a - 2a \\ -2x &= 2b \end{aligned}$$

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

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

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

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

$$\frac{1}{2}x = 4b$$

$$\begin{aligned} \frac{1}{2} + \frac{1}{2}x &= 4b \\ x &= 4b \end{aligned}$$

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

$$\frac{5}{6x} + \frac{2}{8x}$$

$$x = \frac{7}{48}$$

2

$$ii) x^2 - 16x + 4 = 0$$

$$x^2 - 16x + 4$$

$$ax^2 + bx + c$$

$$a = 1 \quad b = -16 \quad c = 4$$

$$a \times c = 1 \times 4 = 4$$

1x4
2x2
4x1

$$(x-16)(x-4)$$

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

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

$$\frac{y^2 - 4}{-5} = \frac{-5y}{-5}$$

$$y = \frac{y^2 - 4}{-5}$$

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