

03/11/2020

1.

(i) $x^4 \times x^6 \times x = x^{11}$

(ii) $2x^2 \times 3x^3 \times 2x$

$2 \times 3 \times 2 = 12$

$12x^2 \times x^3 \times x \rightarrow 12x^5 \times x = 12x^6$

(iii) $\frac{x^4 \times x^3 \times x^2}{x^9} \quad 4 \times 3 \times 2 = 24 \rightarrow x^{24}$

$\frac{x^{24}}{x^9} = x^{15}$

(iv) $(3x^2)^3 \rightarrow 3^3 \times (x^2)^3$
 $3^3 = 27 \quad (x^2)^3 = 27x^6$

(v) $\sqrt{x} \times \sqrt{x} = x \times x$
 $= x^2$

2.

(i) $15x - 2 = 12x + 9$

↓

$15x - 12x - 2 = 9 \rightarrow 15x - 12x = 9 + 2$

↓

$3x = 9 + 2 \rightarrow 3x = 11 \Rightarrow x = \frac{11}{3}$

(ii) $3(7x - 1) = 6(x + 3)$

↓

$21x - 3 = 6x + 18 \rightarrow 21x - 6x - 3 = 18$

$21x - 6x = 18 + 3$

$15x = 18 + 3 \Rightarrow 15x = 21$

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

~~(iii) $5x + 3 = 2x + 9$~~

03/11/2020

$$(iii) \quad \frac{5x+3}{4} = \frac{2x-1}{9}$$

$$9(5x+3) = 4(2x-1)$$

$$45x+27 = 8x-4 \Rightarrow 45x-8x+27 = -4$$

$$45x-8x = -4-27$$

$$37x = -4-27 = 37x = -31$$

$$x = -\frac{31}{37}$$

$$3. \quad (i) \quad x^2 + 10x + 21 = 0$$

$$x^2 + 7x + 3x + 21 = 0 = x(x+7) + 3x+21 = 0$$

$$x(x+7) + 3(x+7) = 0$$

$$x+7=0$$

$$x = -7$$

$$x+3=0$$

$$x = -3$$

$$(ii) \quad x^2 - 3x + 2 = 0$$

$$\downarrow$$

$$x(x-1) - 2(x-1) = 0 \Rightarrow (x-1)(x-2)$$

$$x-1=0$$

$$x=1$$

$$x-2=0$$

$$x=2$$

$$(iii) \quad x^2 + 12x + 20 = 0$$

$$x(x+10) + 2(x+10) = 0$$

$$(x+10)x(x+2) = 0$$

$$x+10=0$$

$$x = -10$$

$$x+2=0$$

$$x = -2$$

03/11/2020

$$(iv) x^2 - 64 = 0$$

$$(x-8)(x+8) = 0$$

$$\begin{array}{ll} x-8=0 & x+8=0 \\ x=8 & x=-8 \end{array}$$

$$(V) 2x^2 + 9x + 10 = 0$$

$$2x^2 + 5x + 4x + 10 = 0$$

$$x(2x+5) + 2(2x+5) = 0$$

$$(2x+5) \times (x+2) = 0$$

$$\begin{array}{ll} 2x+5=0 & x+2=0 \\ \downarrow & \downarrow \\ x=-\frac{5}{2} & x=-2 \end{array}$$

4.

$$5. \begin{array}{l} 5x + 3y = 39 \\ 8x - 2y = 42 \end{array}$$

$$6. \underline{5(2x^2 - y^2)} - \underline{x^2(x^2 - y)} - x^2y - x^4$$

$$10x^2 - 5y^2 - x^4 + x^2y - x^2y - x^4$$

$$10x^2 - 5y^2 - \cancel{x^4} - \cancel{x^4}$$

$$10x^2 - 5y^2 - 2x^4$$

Page 4 of 4

Max John Baker

2013483

03/11/2020

7.

8.

(i) $\sqrt[3]{x} = x^{\frac{1}{3}}$

(ii) $1 \quad ?$