

$$\text{iv. } x^2 - 49 = 0$$

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

$$x - 7 = 0 \quad x + 7 = 0$$

$$x = 7 \quad x = -7$$

$$\text{v. } 2x^2 - 3x - 20 = 0$$

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

$$2x + 10 = 0 \quad x - 2 = 0$$

$$x = -\frac{10}{2} \quad x = 2$$

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

$$\begin{matrix} a & b & c \\ -5x & +14 & = 17x^2 \end{matrix}$$

$$\downarrow 17x^2 - (-5x + 14) = -5x + 14 - (-5x + 14)$$

$$\downarrow 17x^2 + 5x - 14 = 0$$

$$\begin{matrix} a & b & c \end{matrix}$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4(17)(-14)}}{2(17)}$$

$$x = \frac{-5 \pm \sqrt{10 + 977}}{34}$$

$$x = \frac{-5 \pm \sqrt{31.2}}{34}$$

$$x = \frac{-5 - 31.2}{34} \quad \text{or} \quad x = \frac{-5 + 31.2}{34}$$

$$x = \frac{26.2}{34} \quad \text{or} \quad \frac{-26.2}{34} ?$$

$$5. \begin{cases} 6x + 5y = 35 \\ 7x - 4y = 31 \end{cases}$$

$$\begin{array}{r} 6x + 5y = 35 \\ \underline{6x + 5y = 35} \\ 6x + 5y - 5y = 35 - 5y \\ 6x = 5y + 35 \\ x = \frac{5y + 35}{6} \end{array}$$

↓

$$7x - 4y = 31$$

$$7\left(\frac{5y + 35}{6}\right) - 4y = 31$$

$$\frac{7(5y + 35)}{6} - 4y = 31$$

x

$$6. i. \begin{aligned} & 10p^3q^2 - 5p^2q + 15p^4q \\ & 15p^4q + 10p^3q^2 - 5p^2q \\ & = 5p^2q(3p^2 + 2pq - 1) \end{aligned}$$

$$ii. 2x^2y - 4xy^2$$

$$\begin{aligned} & 2xxy - 4xyy \\ & 2xxy + 2 \times 2xyy \\ & = 2xy(x - 2y). \end{aligned}$$

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# Mathematics and Science (Test 1).

P1 of 4  
1)

i.  $x^6 \times x^8 \times x^2 \times x = x^{17}$

ii.  $(2x^2)^4 \times 3x^3$

$$16x^8 \times 3x^3$$

$$16 \times 3 = 48$$

$$48x^{8+3} = 48x^{11}$$

iii.  $\frac{x^2 \times x^{10} \times x}{x^3} = \frac{x^{13}}{x^3} = x^{10}$

iv.  $2\sqrt{x} \times 3\sqrt{x} = 2 \times 3 = 6x$

v.  $1 = x$

2)

i.  $7x - 1 = 5x + 4$

$$7x - 1 + 1 = 5x + 4 + 1$$

$$7x = 5x + 5$$

$$\downarrow 7x - 5x = 5x + 5 - 5x$$

$$2x = 5$$

$$x = 5/2$$

$$x = 2.5$$

ii.  ~~$x^2 - 7x + 10$~~   
 $10(3x + 2) = 7(-2x - 1)$

$$30x + 20 = -14x - 7$$

$$30x + 20 - 20 = -14x - 7 - 20$$

$$\downarrow 30x = -14x - 27$$

$$30x + 14x = -14x - 27 - 14x$$

$$44x = -27$$

$$x = -27/44$$

P2 of 4

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

$$3(x-1) = 3x - 3$$

$$4(2x+1) = 8x + 4$$

$$3x - 3 = 8x + 4$$

$$3x - 3 + 3 = 8x + 4 + 3$$

$$3x = 8x + 7$$

$$3x - 8x = 8x + 7 - 8x$$

$$-5x = 7$$

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

iv.  $(x+2)^2 = (x+3)(x+5)$

$$\frac{x^2 + 2x \times 2 + 2^2}{(x+3)(x+5)} = \frac{x^2 + 4x + 4}{x^2 +}$$

X

3)

i.  $x^2 + 9x + 14 = 0$

$$(x+7)(x+2) = 0$$

$$x+7=0 \quad x+2=0$$

$$x=-7 \quad x=-2$$

ii.  $x^2 - 7x + 10 = 0$

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

$$x+5=0 \quad x+2=0$$

$$x=-5 \quad x=-2$$

iii.  $x^2 + 8x - 20 = 0$

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

$$x+10=0 \quad x-2=0$$

$$x=-10 \quad x=2$$