16/9/2020

141 $(x-a)^3-(x+a)^3=3x(1-2ax)+ax-1$

$$x^3-3ax^2+3a^2x-a^3-(x^3+3ax^2+3a^2x+a^3)=$$

$$=3x-6ax^2+ax-1$$

$$\cancel{x^3}-\cancel{3ax^2}+\cancel{3a^2x}-a^3-\cancel{x^3}-\cancel{3ax^2}-\cancel{3a^2x}-a^3=$$

$$=3x-\cancel{6ax^2}+ax-1$$

$$-3x-ax=a^3+a^3-1$$

$$3x+ax=-2a^3+1$$

$$x(3+a)=1-2a^3$$

$$3+a\neq 0 \Rightarrow a\neq -3 \qquad x=\frac{1-2a^3}{a+3}$$

$$a=-3 \qquad 0=1-2(-27)$$ IMPOSSIBILE

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340 $a(a+x)(a-3)=(a+6)(a+1)(a-1)-8a^2$

$$a(a^2-3a+ax-3x)=(a+6)(a^2-1)-8a^2$$

$$\cancel{a^3}-3a^2+a^2x-3ax=\cancel{a^3}-a+6a^2-6-8a^2$$

$$a^2x-3ax=-a-6-2a^2+3a^2$$

$$ax(a-3)=a^2-a-6$$

$$a(a-3)x=(a-3)(a+2)$$

1) $a\neq 0 \wedge a-3\neq 0$

$\Rightarrow \quad a\neq 0 \wedge a\neq 3 \qquad x=\dfrac{\cancel{(a-3)}(a+2)}{a\cancel{(a-3)}}=\dfrac{a+2}{a}$

2) $a=0 \qquad 0\cdot(-3)\cdot x=(-3)(+2)$

$0=-6$ EQ. IMPOSSIBILE

3) $a=3 \qquad 3\cdot 0\cdot x=0\cdot(3+2)$

$0=0$ EQ. INDETERMINATA

342 $a(a+1)x-(x+1)(a+1)=-2$

$$(a^2+a)x-(ax+x+a+1)=-2$$

$$a^2x+\cancel{ax}-\cancel{ax}-x-a-1=-2$$

$$a^2x-x=-2+a+1$$

$$x(a^2-1)=a-1$$

$$(a-1)(a+1)x=a-1$$

1) $a-1\neq 0 \ \wedge\ a+1\neq 0$

$\Rightarrow a\neq 1 \ \wedge\ a\neq -1$ $\qquad x=\dfrac{\cancel{a-1}}{\cancel{(a-1)}(a+1)}=\dfrac{1}{a+1}$

2) $a=1$ $\qquad 0\cdot 2\cdot x=0 \Rightarrow 0=0$ EQ. INDETERMINATA

3) $a=-1$ $\qquad -2\cdot 0\cdot x=-2 \Rightarrow 0=-2$ EQ. IMPOSSIBILE

343 $(a-1)(a+2)x-(a-1)(2a-1)x=a^2-6a+9$

$$(a-1)\,x\cdot\left[a+2-(2a-1)\right]=(a-3)^2$$

$$(a-1)(a+2-2a+1)\,x=(a-3)^2$$

$$(a-1)(-a+3)\,x=(a-3)^2$$

1) $a-1\neq 0 \ \wedge\ -a+3\neq 0$

$a\neq 1 \ \wedge\ a\neq 3$ $\qquad x=\dfrac{(a-3)^{\cancel{2}}}{-(a-1)\cancel{(a-3)}}=\dfrac{a-3}{1-a}$

2) $a=1$ $\qquad 0=4$ $\qquad$ EQ. IMPOSSIBILE

3) $a=3$ $\qquad 0=0$ $\qquad$ EQ. INDETERMINATA