

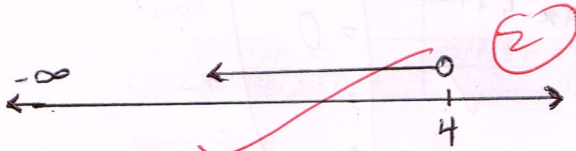
Question 1

a) i) $(-4, 1]$

ii) $(-\infty, 0)$

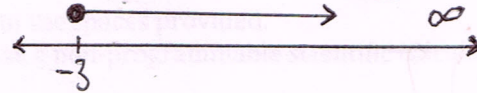
$$\frac{16\frac{1}{2}}{20}$$

b) i) $-\infty < x < 4$



$(-\infty, 4)$

ii) $x \geq -3$



$[-3, \infty)$

c) $5(x + 3(1 - x) + 2) \geq 5$

$5(x + 3 - 3x + 2) \geq 5$

$5x + 15 - 15x + 10 \geq 5$

$-10x + 25 \geq 5$

$-10x + 25 - 25 \geq 5 - 25$

$\frac{-10x}{-10} \leq \frac{-20}{-10}$

$x \leq 2$

Question 2

a) i) $2^{\frac{1}{2}} \times 4^{\frac{3}{2}}$

$$= 2^{\frac{1}{2}} \times (2^2)^{\frac{3}{2}}$$

$$= 2^{\frac{1}{2}} \times 2^3$$

$$= 2^{\frac{1}{2}+3} = 2^{\frac{7}{2}}$$

$$= 2 + 3\frac{1}{2}$$

$$= 5\frac{1}{2}$$

ii) $256^{2x-3} \times 16^{1-x}$

$$(16^2)^{2x-3} \times 16^{1-x} = 0$$

$$16^{4x-6} \times 16^{1-x} = 0$$

$$16^{4x-6+1-x} = 0$$

$$3x-5 = 0$$

$$3x-5+5 = 5$$

$$\frac{3x}{3} = \frac{5}{3}$$

$$x = \frac{5}{3}$$

Simplify!

$\frac{1}{2}$

b) i) $9^x = 27$

$$(3^2)^x = 3^3$$

$$3^{2x} = 3^3$$

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

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

ii) $2^{2n} = 16^{-\frac{3}{4}} \times \left(\frac{1}{4}\right)^{-2}$

$$2^{2n} = (2^4)^{-\frac{3}{4}} \times \left(\frac{1}{2^2}\right)^{-2}$$

$$2^{2n} = 2^{-3} \times (2^{-2})^{-2}$$

$$2n = -3+4$$

$$\frac{2n}{2} = \frac{1}{2}$$

$$n = \frac{1}{2}$$

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MATHS: OS/PP18F1033

Question 1

a(i)

~~$(-4, 1]$~~

2

(ii)

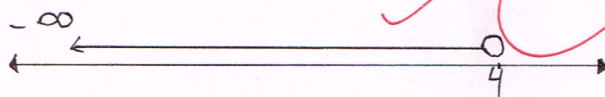
~~$(-\infty, 0)$~~

2

$\frac{17}{20}$ Correct

b) (i)

$$-\infty < x < 4$$

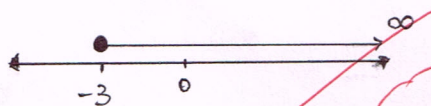


~~$(-\infty, 4)$~~

2

(ii)

$$x \geq -3$$



~~$[-3, \infty)$~~

2

c) $5(x + 3(1-x) + 2) \geq 5$

$$5(x + 3 - 3x + 2) \geq 5$$

$$5x + 15 - 15x + 10 \geq 5$$

$$5x - 15x + 15 + 10 \geq 5$$

$$\begin{array}{r} -10x + 25 \geq 5 \\ -25 \quad -25 \end{array}$$

$$\begin{array}{r} -10x \geq -20 \\ \hline 10 \quad -10 \end{array}$$

~~$x \leq 2$~~ #

2

Question 2

(a) (i) $2^{\frac{1}{2}} \times 4^{\frac{3}{2}}$

$= 2^{\frac{1}{2}} \times (2^2)^{\frac{3}{2}}$

$= 2^{\frac{1}{2}} \times 2^3$

$= 2^{\frac{1}{2}+3}$

$= 2^{3\frac{1}{2}}$

$= 5^{\frac{1}{2}}$

(ii) $256^{2x-3} \times 16^{1-x}$

$\frac{2(2x-3)}{4x-6}$

$(16^2)^{2x-3} \times 16^{1-x}$

16^{4x-6}

$\times 16^{1-x}$

$16^{4x-6+1-x}$

$= 16^{3x-5}$

simplest

(ii) $2^{2n} = 16^{-\frac{3}{4}} \times \left(\frac{1}{4}\right)^{-2}$

$2^{2n} = (2^4)^{-\frac{3}{4}} \times (4^{-1})^{-2}$

$2^{2n} = 2^{-3} \times 4^{-2}$

$= 2^{-3+(-2)}$

$2^{2n} = 2^{-5}$

$\frac{2n}{2} = \frac{-5}{2}$

$n = \frac{-5}{2}$ or $-2\frac{1}{2}$ or -2.5

$n = \frac{1}{\sqrt{2}}$

b) (i) $9^x = 27$

$(3^2)^x = 3^3$

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

$x = \frac{3}{2}$ or $x = 1.5$

$x = 2$

19/20 Good

Question 1

a) i) ~~$[-4, 1]$~~

ii) ~~$(-\infty, 0)$~~ $(-\infty, 0)$

$-\infty \leftarrow 0$

b) i) $\leftarrow 4 \rightarrow$

ii) $\bullet \rightarrow \infty$
 $\leftarrow -3 \rightarrow$

a) ii) $256^{2x-3} \times 16^{1-x}$
 $= (4^4)^{2x-3} \times (4^2)^{1-x}$
 $= 4^{8x-12} \times 4^{2-2x}$
 $= 4^{6x-10}$
 $= 6x-10+10=0$

$\frac{6x}{6} = \frac{10}{6}$

$x = \frac{5}{3}$

b) i) $9^x = 27$

$(3^2)^x = 3^3$

$3^{2x} = 3^3$

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

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

c) $5(x+3(1-x)+2) \geq 5$

$5(x+3-3x+2) \geq 5$

$5x+15-15x+10 \geq 5$

$5x-15x+15+10 \geq 5$

$-10x+25 \geq 5$

$-10x+25-25 \geq 5-25$

$\frac{-10x}{-10} \geq \frac{-20}{-10}$

$x \leq 2$

b) ii) $2^{2n} = 16^{-\frac{3}{4}} \times \left(\frac{1}{4}\right)^{-2}$

$2^{2n} = (2^4)^{-\frac{3}{4}} \times \left(\frac{1}{2^2}\right)^{-2}$

$2^{2n} = 2^{-3} \times 2^{-4}$

$2n = -3+4$

$2n = 1$

$\frac{2n}{2} = \frac{1}{2}$

$n = \frac{1}{2}$

Question 2

a) i) $2^{\frac{1}{2}} \times 4^{\frac{3}{2}}$

$= 2^{\frac{1}{2}} \times (2^2)^{\frac{3}{2}}$

$= 2^{\frac{1}{2}+3}$

$= 2^{\frac{7}{2}}$

fulis
behtul-behtul

Question 1

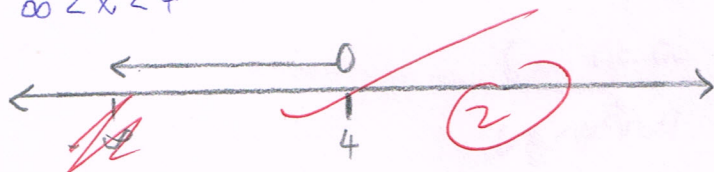
a)

i) $[-4, 1]$

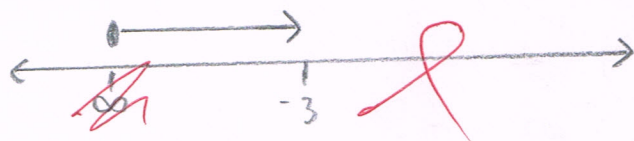
ii) $(-\infty, 0)$

b) $-\infty < x < 4$

c)



d) $x \geq -3$



e)

$$5(x+3(1-x)+2) \geq 5$$

$$5(x+3-3x+2) \geq 5$$

$$5x+15-15x+10 \geq 5$$

$$5x-15x+15+10 \geq 5$$

$$-10x+25 \geq 5$$

$$-10x+25-25 \geq 5-25$$

$$\frac{-10x}{-10} \geq \frac{-20}{-10}$$

$$x \leq 2$$

2

Do not write this!

$$\frac{11\frac{1}{2}}{20}$$

ii) $256^{2x-3} \times 16^{1-x}$ ← simplify

$$(4^4)^{2x-3} \times (4^2)^{1-x}$$

$$= 4^{8x-12} \times 4^{2-2x}$$

$$= 4^{8x-2x-12+2}$$

$$= 4^{6x-10}$$

$$6x-10=0$$

$$6x=10$$

$$x=\frac{5}{3}$$

(1 2/3)

i) $2^{\frac{1}{2}} \times 4^{\frac{3}{2}}$

$$= 2^{\frac{1}{2}} \times (2^2)^{\frac{3}{2}}$$

$$= 2^{\frac{1}{2}} \times 2^3$$

$$= 2^{\frac{7}{2}}$$

$$= 2 + 3 \frac{1}{2}$$

$$= 5 \frac{1}{2}$$

(5 1/2)

i) $9^x = 27$

$$(3^2)^x = 3^3$$

$$3^{2x} = 3^3$$

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

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

(1 1/2)

ii) $2^{2n} = 16^{-\frac{3}{4}} \times (\frac{1}{4})^{-2}$

$$2^{2n} = (2^4)^{-\frac{3}{4}} \times (\frac{1}{2^2})^{-2}$$

$$2^{2n} = 2^{-3} \times 2^{-4}$$

$$2n = -3-4$$

$$2n = -7$$

$$n = -\frac{7}{2}$$

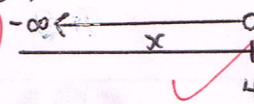
(1 1/2)

Question 1

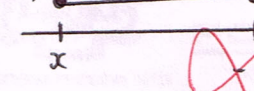
a i) $(-4, 1]$

ii) $(-\infty, 0)$

b i)



ii)



c) $5(x+3-3x+2) \geq 5$

$5x + 15 - 15x + 10 \geq 5$

$5x - 15x + 15 + 10 \geq 5$

$-10x + 25 \geq 5$

$-10x + 25 - 25 \geq 5 - 25$

$\frac{-10x}{-10} \geq \frac{-20}{-10}$

$x \geq 2$

$\frac{9}{120}$

$1\frac{1}{2}$

Question 2

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

$= 2\frac{1}{2} + (2^2)^{\frac{3}{2}}$

$= 2\frac{1}{2} + 3$

$= 3\frac{1}{2}$

$= 2\frac{7}{2}$

ii) $(4^4)^{2x-3} \times (4^2)^{1-x}$

$= 4^2 8x - 12 \times 4^2 - 2x$

$= (8x + 12) + (2 - 2x)$

$= 8x - 12 + 2 - 2x$

$= 8x - 2x + 2 - 2x$

$= 8x - 2x - 12 + 2$

$= 6x - 10$

Don't write here.

b i) $9x = 27$

ii)

$\frac{9x}{9} = \frac{27}{9}$

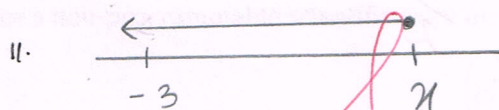
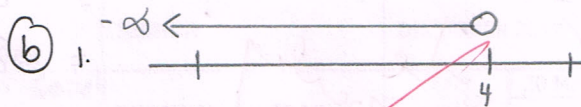
$x = 3$

$$\frac{8\frac{1}{2}}{20}$$

Question 1

a) i. $(-4, 1]$

ii. $(\infty, 0)$



c) $5x: 5(x+3(1-x)+2) \geq 5$

$$= 5(x+3-3x+2) \geq 5$$

$$= 5x+2 \geq 5-3x$$

$$= 5x-3x+2 \geq 5$$

$$= 5x-3x+2-2 \geq 5-2$$

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

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

Don't rule

Question 2

(a) i. $2^{\frac{1}{2}} \times 4^{\frac{3}{2}}$

$= 2^{\frac{1}{2}} \times (2^2)^{\frac{3}{2}}$

$= 2^{\frac{1}{2} + 3}$

$= 2^{\frac{7}{2}}$

$\frac{7}{2}$

2

write properly

(2)

ii. $256^{2x-3} \times 16^{1-x}$

$= (4^4)^{2x-3} \times (4^2)^{1-x}$

$= 8x - 12 + 2 - 2x$

$= 8x - 2x - 12 + 2$

$\frac{6x}{6} = \frac{-10}{6}$

$x = -\frac{5}{3}$

(b) i. $9^x = 27$

$(3^2)^x = (3^3)$

$\frac{2x}{2} = \frac{9}{2}$

$x = \frac{9}{2}$

$\frac{1}{2}$

ii. $2^{2x} = 16^{-\frac{3}{4}} \times (\frac{1}{4})^{-2}$

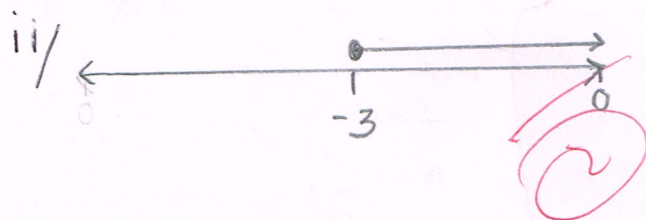
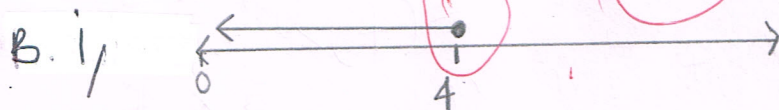
$2^{2x} = (4^2)^{-\frac{3}{4}} (\frac{1}{2^2})^{-2}$

$\frac{1}{2}$

Question 1

a. i. $(-4, 0)$

ii. $(-\infty, 00)$



c.

$$5(x + 3(1-x)) + 2 \geq 5$$

$$= 5x + 15 - 3 - 3x + 2 \geq 5$$

$$= 5x + 15 - 6x + 2 \geq 5$$

$$= 5x + 15 - 6x + 2 \geq 5 + 15$$

$$= 5x + 15 - 6x + 2 \geq 20$$

$$= 5x + 15 - 15 - 6x + 2 \geq 20$$

$$= 5x + -6x + 2 \geq 20 \quad \#$$

$$\frac{6}{20}$$

4. mte.

Question 2

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

$$= 2^{\frac{1}{2}} \times (2^2)^{\frac{3}{2}}$$

$$= 2^{\frac{1}{2}} \times (4)^{\frac{3}{2}}$$

$$= 2^{\frac{1}{2}} \times 6$$

$$= 4 \times 6$$

$$= 24$$

$$\left(\frac{1}{2}\right)$$

ii) $256^{2x-3} \times 16^{1-x}$

$$= (256)^{2x-3} \times 16^{1-x}$$

$$= 512^{2x-3} \times 16^{1-x}$$

b) $9^x = 27$

$$(3)^{3x} = (9)^3$$

ii) $2^{2n} = 16^{-\frac{3}{4}} \times \left(\frac{1}{4}\right)^{-2}$

$$16^{-\frac{3}{4}} \times \left(\frac{1}{4}\right)^{-2} = 2^{2n}$$

$$= -12 \times \left(\frac{1}{4}\right)^{-2} = 2^{2n}$$

$$= -12 \times -\frac{1}{2} = 2^{2n}$$

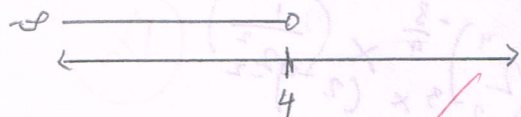
Question 2

a) i, $[-\infty, 4)$

$(1, \infty)$

$$\frac{4}{20}$$

b) i,



$(-\infty, 4)$



$(-\infty, -3)$

(c) $5(x+3(1-x)+2) \geq 5$

$$5(x+3-3x+2) \geq 5$$

$$5x+10+5 \geq 0$$

$$5x+15 \geq 0$$

$$5x+15-15 \geq 0-15$$

$$\frac{5x}{5} \geq \frac{-15}{5}$$

$$x \geq -3$$

Question 2

a) i, $2^{\frac{1}{2}} \times 4^{\frac{3}{2}}$

$$2^{\frac{1}{2}} \times (2^2)^{\frac{3}{2}}$$

$$2^{\frac{1}{2}} \times 2^6$$

$$2+6$$

$$= 8$$

ii, $25^{2n-3} \times 16^{1-n}$

$$(4^2)^{2n-3} \times (4^2)^{1-n}$$

$$8n - 12 \times 2 - 2n = 0$$

$$8n - 2n - 12 + 2 = 0$$

$$6n - 10 = 0$$

$$6n - 10 + 10 = 0 + 10$$

$$\frac{6n}{6} = \frac{10}{6}$$

$$n = \frac{5}{3}$$

(b) $9^n = 27$

$$\frac{9 \cdot n}{9} = \frac{27}{9}$$

$$n = 3$$

ii, $2^{2n} = 16^{-\frac{3}{4}} \times \left(\frac{1}{4}\right)^{-2}$

$$2^{2n} = (2^4)^{-\frac{3}{4}} \times (2^{-2})^{-2}$$

$$2^{2n} = 2^{-3} \times 2^4$$

$$\frac{2^{2n}}{2} = \frac{1}{2}$$

$$n = \frac{1}{2}$$

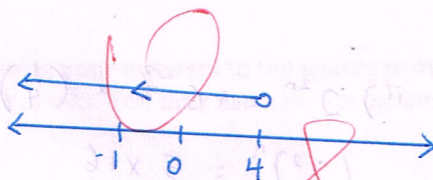
Question 1

i) $[1, -4)$

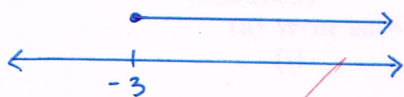
ii) $(0, \infty]$

~~Question 2~~

i) $-\infty < x < 4$



ii) $x \geq -3$



$[-3, \infty)$

c) ~~$5(x+3)$~~ $5(x+3(1-x))+2 \geq 5$

$5x(3-3x+2) \geq 5$

$5x + 15x / 15x + 10 \geq 5$

$5x + 10 \geq 5$

$5x + 10 / 10 \geq 5 - 10$

$\frac{5x}{5} \geq \frac{-5}{5}$

$x \geq -1$

Question 2

$$i) 2^{\frac{1}{2}} \times 4^{\frac{3}{2}}$$

~~$$2^{\frac{1}{2}} \times 4^{\frac{3}{2}}$$~~

$$2^2 \times 4^2$$

$$4 \times 8$$

$$= 32$$

$$ii) 256^{2x-3} \times 16^{1-x}$$

~~$$256^{2x-3} \cdot 16^{1-x} = 16^2$$~~

~~$$256^{2x-3-(1-x)} = 16^{-2}$$~~

~~$$256^{-1} = 16^{-2}$$~~

~~$$\frac{-1x}{-1} = \frac{-2}{-1}$$~~

~~$$x = 2$$~~

$$b) i) 9^x = 27$$

$$9^x = 3^3$$

$$= \frac{1}{3^3}$$

$$= \frac{1}{27}$$

$$ii) 2^{2n} = 16^{-\frac{3}{4}} \times \left(\frac{1}{4}\right)^{-2}$$

$$(2^2)^n = 5 \times 16$$

$$4 = 80$$

~~$$= \frac{80}{4}$$~~

~~$$= 20$$~~