

1) (i) $\frac{7}{2}$ (ii) $3\frac{1}{2}$ (iii) $\frac{1}{2}$

1 1 1
3

2) (i) $3\frac{1}{3} + 5\frac{1}{2} = \frac{10}{3} + \frac{11}{2}$

$= \frac{20 + 33}{6}$

$= \frac{53}{6} = 8\frac{5}{6}$

1
1
1

(i) $4\frac{2}{3} \times 2\frac{1}{4} = \frac{14}{3} \times \frac{9}{2}$

$= \frac{42}{1} = \frac{21}{1} = 21$

1 1
1

8

3) 0.1457895

3dp : 0.146

4sf : 0.1458

1
1

2

$$5) \quad (i) \quad x^2 + 11x + 30 = 0$$

$$(x+5)(x+6) = 0$$

$$x+5=0 \quad x+6=0$$

$$x = -5 \quad x = -6$$

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$$(ii) \quad x^2 - 25 = 0$$

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

$$x = \pm 5$$

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$$(iii) \quad 2x^2 = -5x - 3$$

$$2x^2 + 5x + 3 = 0$$

$$(2x+3)(x+1) = 0$$

$$2x+3=0 \quad x+1=0$$

$$2x = -3 \quad x = -1$$

$$x = -3/2$$

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(11)

6)

$$x = \frac{-3 \pm \sqrt{(3)^2 - 4(8)(-4)}}{2(8)}$$

$$x = \frac{-3 \pm \sqrt{9 + 128}}{16}$$

$$x = \frac{-3 \pm \sqrt{137}}{16}$$

$$x = \frac{-3 \pm 11.70}{16}$$

$$x = \frac{-3 + 11.70}{16}$$

$$x = \frac{-3 - 11.70}{16}$$

$$x = 0.54$$

$$x = 0.5$$

to 1 dp

$$x = -0.91$$

$$x = -0.9$$

to 1 dp

7)

$$2x + 3y = 3 \quad (1) \times 2$$

$$5x + 2y = 13 \quad (2) \times 3$$

$$4x + 6y = 6 \quad (3)$$

$$15x + 6y = 39 \quad (4)$$

(4) - (3)

$$11x = 33$$

$$x = 3 \rightarrow \text{in } (1)$$

$$6 + 3y = 3$$

$$3y = -3$$

$$y = -1$$

(5)

8)

$$w = \frac{y + xt}{x+1}$$

[x]

$$w(x+1) = y + xt$$

$$wx + w = y + xt$$

$$w - y = xt - wx$$

$$w - y = x(t - w)$$

$$\frac{w-y}{t-w} = x$$

(5)

$$9) \frac{5x+11}{(x+3)(x+2)} = \frac{A}{(x+3)} + \frac{B}{(x+2)}$$

$$5x+11 = A(x+2) + B(x+3)$$

$$\underline{x = -2}$$

$$-10+11 = B$$

$$\boxed{1 = B}$$

$$\underline{x = -3}$$

$$-15+11 = -A$$

$$-4 = -A$$

$$\boxed{4 = A}$$

$\therefore$ pfs are

$$\boxed{\frac{4}{(x+3)} + \frac{1}{(x+2)}}$$

$$10) (i) x^5 \times x^2 = \boxed{x^7}$$

$$(ii) (3u)^2 = \boxed{9u^2}$$

$$(iii) \sqrt[5]{x^3 \times x}$$

$$= \sqrt[5]{x^4}$$

$$= \boxed{x^{4/5}}$$

for $q \rightarrow$
for u^2

(5)

(5)

11)

$$(i) 5^{x+1} = 3^x$$

$$\log 5^{x+1} = \log 3^x$$

$$(x+1)\log 5 = x\log 3$$

$$(x+1)0.70 = 0.48x$$

$$0.7x + 0.7 = 0.48x$$

$$0.7x - 0.48x = -0.7$$

$$0.22x = -0.7$$

$$x = 3.18$$

④

$$(ii) 2\log(x+3) = \log(x+2) + \log(x+5)$$

$$\log(x+3)^2 = \log(x+2)(x+5)$$

$$(x+3)(x+3) = (x+2)(x+5)$$

$$x^2 + 6x + 9 = x^2 + 7x + 10$$

$$9 - 10 = 7x - 6x$$

$$-1 = x$$

④

12)

(i) $2(x+3) = 5(x+1)$

$$2x+6 = 5x+5$$

$$6-5 = 5x-2x$$

$$1 = 3x$$

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

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(ii) $\frac{(2x+1)}{5} = \frac{(3x+2)}{2}$

$$2(2x+1) = 5(3x+2)$$

$$4x+2 = 15x+10$$

$$2-10 = 15x-4x$$

$$-8 = 11x$$

$$\frac{-8}{11} = x$$

i.e. -0.73

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8

Total 67 marks

