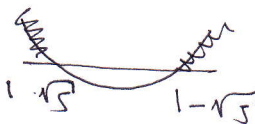



1. COMPLETE THE SQUARE OR USE QUADRATIC FORMULA M1
SIGN OF $x = 1 \pm \sqrt{5}$ o.e. A1

 OR EQUIVALENT METHOD M1
 $x < 1 - \sqrt{5}$ OR $x > 1 + \sqrt{5}$ A1 ~~dep~~ 

(DO NOT ACCEPT UNCONVENTIONAL NOTATION AT THE END)

2. $1 + 2\sqrt{3} + 3$ o.e. B1 B1

$16 + 16\sqrt{3} + 12$ A2 -1 e.e.o.

GIVE THE FINAL ANSWER CONVINCINGLY A1

3. $\int 5 - \frac{8}{x^2} dx$ o.e. B1

$5x + 8x^{-1} + C$ o.e. A3

$2[5 + 8 + C] = 4 + [10 + 4 + C]$ M1

$C = -8$ OR $5x + \frac{8}{x} - 8$ A1

FINAL ANSWER 14 c.a.o. A1

4. a) $\frac{-3-y}{2-(-2)}$ O.E M1

$-\frac{y+3}{4}$ or $\frac{-y-3}{4}$ or $\frac{y+3}{-4}$ A1

b) $\frac{y-5}{-3}$ O.E B1

$-\frac{y+3}{4} \times \frac{y-5}{-3} = -1$ or $-\frac{y+3}{4} = \frac{3}{y-5}$ M1
or $\frac{y-5}{-3} = \frac{4}{y+3}$

$y^2 - 2y - 3 = 0$ M1

$(y+1)(y-3)$ M1

$y = -1, 3$ (BOTH) A1

6. a) $36000 = 18000 + (n-1) \times 1800$ M1

$n = 11$ A1

b) $\frac{11}{2} [18000 + 36000]$ or $\frac{11}{2} [2 \times 18000 + 10 \times 1800]$ M1 ft

297000 A1

c) $36000 = A + 14 \times 1000$ M1

$A = 22000$ A1

$18000 + (n-1) \times 1800 = 22000 + (n-1) \times 1000$ M1 ft.

$n = 6$ A1

d) $297000 + 4 \times 36000$ M1 ft.

441000 A1

$\frac{15}{2} [22000 + 36000]$ M1 ft.

435000 A1

6000 c.a.o A1

6. a) $1 + 2x^{\frac{1}{2}} + x$ B1

$\left(\frac{dy}{dx}\right) = x^{-\frac{1}{2}} + 1$ A1 A1

b) INPUTS OR STARTS GRADIENT OF LINE IS $\frac{3}{2}$ B1

" $x^{-\frac{1}{2}} + 1 = \frac{3}{2}$ " M1

SIGNIFICANT STEP IN THE SOLUTION OF EQUATION M1

$x = 4$ A1

$y = 9$ A1

7. a) $76 = a + 88b$ M1

$70 = a + 76b$ M1

ATTEMPT A VALID SOLUTION METHOD M1

$a = 32, b = \frac{1}{2}$ A1 A1

b) $2 \times 88 - 64$ o.e. or $2 \times "112" - 64$ M1
 112 A1
 (AFTER THEIR FIRST STEP)

FINAL ANSWER 160 A1

c) $L = 32 + \frac{1}{2}L$ M1
 $L = 64$ c.a.o. A1) \uparrow dcp

8.

$$y = mx \quad \text{o.f.} \quad B1$$

$$mx = \sqrt{2x-4} \quad M1$$

$$m^2 x^2 = 2x-4 \quad \text{or} \quad m^2 x^2 - 2x + 4 = 0 \quad M1$$

$$(-2)^2 - 4m^2 \times 4 = 0 \quad M1$$

$$m = \frac{1}{2} \quad (\text{Ignore } -\frac{1}{2}) \quad A1$$

$$\frac{1}{2}x^2 - 2x + 4 = 0 \quad \text{or} \quad x^2 - 4x + 8 = 0 \quad M1$$

$$(x-4)^2 = 0 \quad M1$$

$$x = 4 \quad A1$$

$$y = 2 \quad A1$$

9.

$$2\sqrt{3}x^2 - 7x + 2\sqrt{3} = 0 \quad \text{o.f.} \quad M1$$

QUADRATIC FORMULA OR COMPLETING THE SQUARE

$$\frac{7 \pm \sqrt{49 - 4(2\sqrt{3})(2\sqrt{3})}}{2 \times 2\sqrt{3}} \quad M1$$

$$\frac{7 \pm 1}{4\sqrt{3}} \quad \text{o.f.} \quad MA1$$

RATIONALIZES ANSWERS M1

$$\frac{2}{3}\sqrt{3} \quad A1$$

$$\frac{1}{2}\sqrt{3} \quad A1$$

10.

SIGNIF OF $f(x-1)$ & $f(\frac{1}{2}x)$ TOGETHER
 OR $f(x+1)$ & $f(2x)$ TOGETHER
 OR $f(\frac{1}{2}x-1)$

B1

EVIDENCE OF ATTEMPTING TO REVERSE IN THE CORRECT ORDER) M1

$$8(\frac{1}{2}x)^2 - 22(\frac{1}{2}x) + 10 \quad M1$$

$$2x^2 - 11x + 10 \quad A1$$

$$\text{" } 2(x+1)^2 - 11(x+1) + 10 \text{" } \quad M1 \text{ \cancel{A1}}$$

SIMPLIFIES CORRECTLY TO THE ANSWER GIVEN A1

ACCEPT $g(\frac{1}{2}x + \frac{1}{2}) \quad B2$

$$8(\frac{1}{2}x + \frac{1}{2})^2 - 22(\frac{1}{2}x + \frac{1}{2}) + 10 \quad M1$$

$$8(\frac{1}{4}x^2 + \frac{1}{2}x + \frac{1}{4}) - 11x - 11 + 10 \quad M1$$

$$2x^2 + 4x + 2 - 11x - 11 + 10 \quad M1$$

$$2x^2 - 7x + 1 \quad A1$$