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Test

Name: Maanya Vulchi

Start time: 9:03

End time:

1. $4^{3x-1} = 1.5625 \times 10^{-2}$ M1

$(2^2)^{3x-1}$

$2^{6x-2} = \frac{25}{16} \times 0.01$ A1

$= \frac{25}{1600}$

$= 2^{-6}$

$2^{6x-2} = 2^{-6}$

$6x - 2 = -6$ A1

$6x = -4$

$x = \frac{-4}{6}$

$x = -\frac{2}{3}$ A1

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2.

$a = 5a$

$b = b$

$n = 7$

$(5a)^{n-k}$ $n-k=3 \rightarrow a^3$

$n - k = 7 - k = 3$ M1

$k = 4$

$^7C_4 = \frac{7!}{4!(7-4)!}$

$= \frac{7 \times 6 \times 5}{3 \times 2 \times 1}$

$= 35$

$35(5a)^3$ M1

$35 \cdot 125a^3$

$= 4376a^3b^4$ A1

$= 4375$ A1

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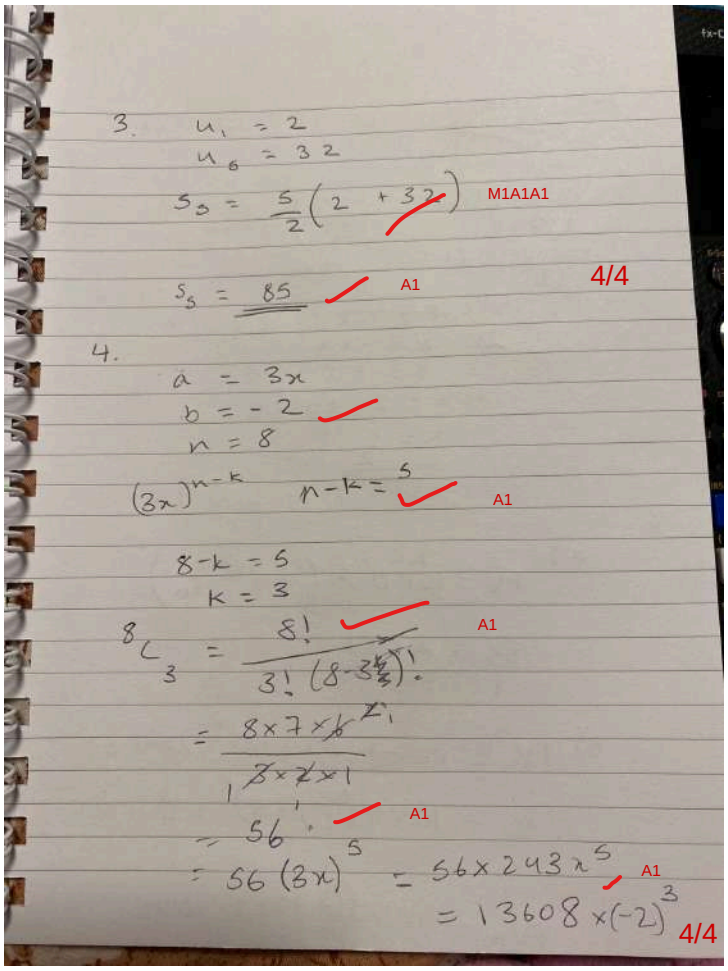

3. $u_1 = 2$

$u_6 = 32$

$S_5 = \frac{5}{2}(2 + 32)$ M1A1A1

$S_5 = 85$ A1

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4. $a = 3x$

$b = -2$

$n = 8$

$(3x)^{n-k}$ $n-k = 5$ A1

$8-k = 5$

$k = 3$

$8C_3 = \frac{8!}{3!(8-3)!}$ A1

$= \frac{8 \times 7 \times 6}{3 \times 2 \times 1}$

$= 56$ A1

$= 56(3x)^5 = 56 \times 243x^5$ A1

$= 13608 \times (-2)^3$

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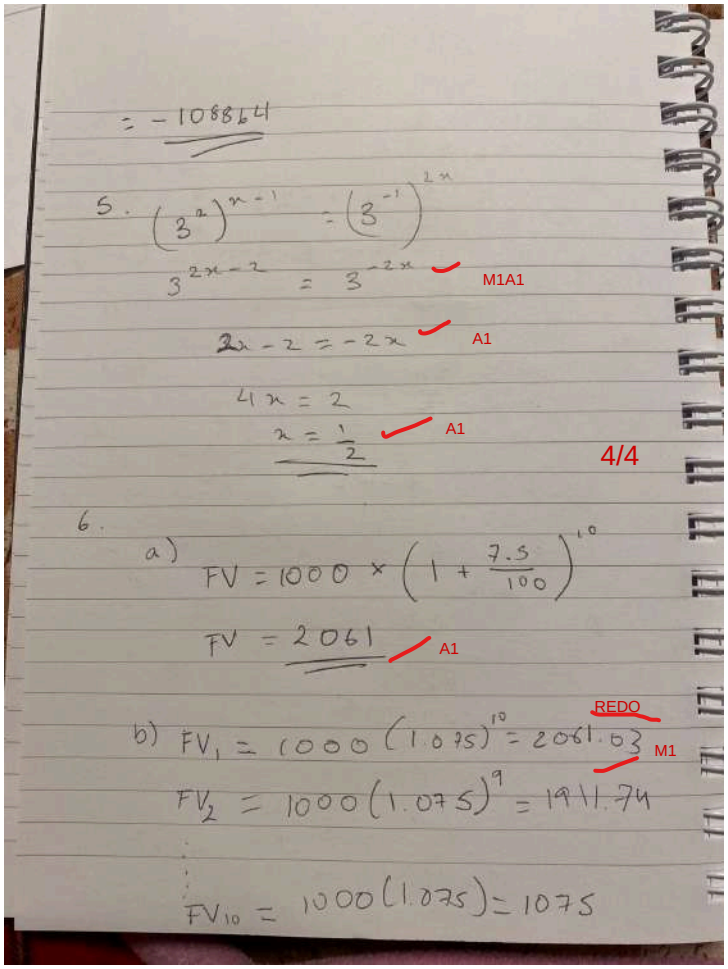

$= -108864$

5. $(3^{2x})^{x-1} = (3^{-1})^{2x}$

$3^{2x-2} = 3^{-2x}$ M1A1

$2x - 2 = -2x$ A1

$4x = 2$

$x = \frac{1}{2}$ A1

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6.

a) $FV = 1000 \times \left(1 + \frac{7.5}{100}\right)^{10}$

$FV = 2061$ A1

b) $FV_1 = 1000(1.075)^{10} = 2061.03$ REDO M1

$FV_2 = 1000(1.075)^9 = 1911.74$

$FV_{10} = 1000(1.075) = 1075$

Add them (Using GDC)

Ans: $12,026 (nearest dollar

$ 15208

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7.

a) $u_3 = 2 + (3-1)d$ M1

$8 = 2 + 2d$

$6 = 2d$

$d = 3$ A1

b) $u_{20} = 2 + (20-1)3$ A1

$u_{20} = 2 + 57$

$= 59$ A1

c) $S_{20} = \frac{20}{2}(2 + 59)$ A1

$S_{20} = 10(2 + 59)$

$= 610$ A1

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8. N/A

9. N/A

10.

a) 1.06×1000 ← 2nd month

$= 1060$ A1

3rd month: 1.06×1060

$= 1123.6$ A1

~~3rd month: 1.06×1123.6~~

~~$= 1191.016$~~

b) Plan A:

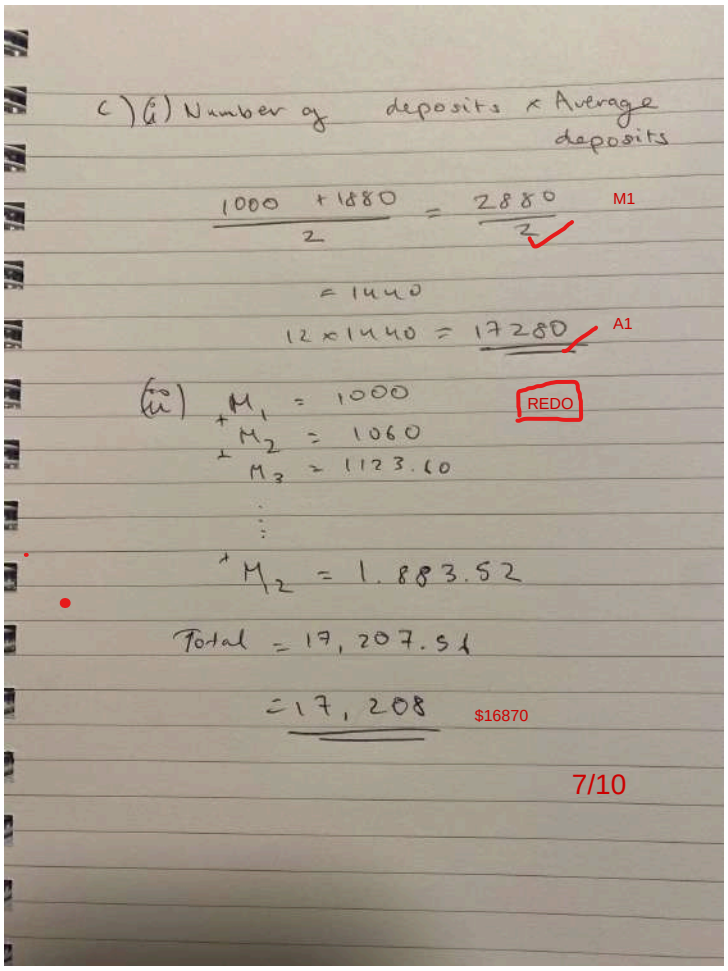
$1000 + 80(12-1) = 1880$ M1A1

Plan B:

$1000 \times (1.06)^{11}$ M1

$= 1790.85$

$= 1791$ $1898



c)(i) Number of deposits × Average deposits

$\frac{1000 + 1880}{2} = \frac{2880}{2}$ M1

$= 1440$

$12 \times 1440 = 17280$ A1

(ii) $M_1 = 1000$ REDO

$M_2 = 1060$

$M_3 = 1123.60$

$\vdots$

$M_{12} = 1.883.52$

Total $= 17,207.51$

$= 17,208$ $16870

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