KEMENTERIA PENDIDIKAN MALAYSIA — POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME	DBM2033 DISCRETE MATHEMATICS	
		COURSEWORK ASSESSMENT	QUIZ 3	
		SESSION	DECEMBER 2018	
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION: 15 MINS	CLO1	10 MARKS
NAME	Mac Harry Anak Doren.		CLO2	
REGISTRATION NO.	05DDT18F1062		CLO3	
PROGRAMME/ SECTION	DDT2A	TOTAL MARKS	10 MARKS	

8

Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO2, C3 [6 marks]

Let P(n) is the statement of $1+4+7+10+\cdots+(3n-2)=\frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.

(b) Complete the inductive step.

Question 2

CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0)=1$ and $f(n+1)=\frac{2}{f(n)}+3f(n)$.

Count $f(4)$.

Question 1

a) $1+4+7+10+\ldots+(3n-2)=\frac{n(3n-1)}{2}$

$P(n)$

$P(1): (3(1)-2)=\frac{(1)(3(1)-1)}{2}$

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

$1=1$

Both sides are equal to 1.

2½/2

b) $n=k$

$1+4+7+10+\ldots+(3k-2)=\frac{k(3k-1)}{2}$

$n=k+1$

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

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

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

$\frac{k(3k-1)+6k+2}{2}=\frac{3k^2+2k+3k+2}{2}$

$3k^2-k+6k+2=3k^2+2k+3k+2$

$3k^2+5k+2=3k^2+5k+2.$

//

4

Question 2

$f(1): f(0+1) = \frac{2}{f(1)} + 3f(1)$

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

$f(1) = 5$

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

$f(2) = \frac{2}{2} + 6$

$= 7.$

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

$f(3) = \frac{2}{3} + 9$

$= 9.67$

$f(4): (3+1) = \frac{2}{f(4)} + 3f(4)$

$f(4) = \frac{2}{2} + 12$

$= 12.5.$

1

KEMENTERIA PENDIDIKAN MALAYSIA / POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME		DBM2033 DISCRETE MATHEMATICS
		COURSEWORK ASSESSMENT		QUIZ 3
		SESSION		DECEMBER 2018
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION	15 MINS	CLO1 10 MARKS
NAME	Ahmed khalid bin Suttion			CLO2
REGISTRATION NO.	05DDT18F1119			CLO3
PROGRAMME/ SECTION	DDT2A	TOTAL MARKS		10 MARKS

2½

Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO2, C3 [6 marks]

Let P(n) is the statement of $1 + 4 + 7 + 10 + \cdots + (3n - 2) = \frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.

(b) Complete the inductive step.

Question 2

CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0) = 1$ and $f(n+1) = \frac{2}{f(n)} + 3f(n)$.

Count $f(4)$.

a) $(3(1)-2) = \frac{1(3(1)-1)}{2}$

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

$1 = \frac{1(2)}{2}$

$1 = 1$

both side is equal to 1

2½

Q2)

$f(0) = 1$

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

$f(4+1) = \frac{2}{f4} + 3f(4)$

$5 = \frac{1}{2} = 12$

b) $\frac{k(+1)(1+n)}{2}$

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

$3k-2 = \frac{k(3k-1)}{2}$

Q2

$f(0)=1$ and $f(n+1) = \frac{2}{fn} + 3f(n)$

~~$f(n+1) = \frac{2}{fn} + 3f$~~

$f(4+1) = \frac{2}{4} + 3(4)$

$f(5) = \frac{1}{2} + 12$

$f(5) = 12.5$

KEMENTERIAN PENDIDIKAN MALAYSIA — POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME	DBM2033 DISCRETE MATHEMATICS	
		COURSEWORK ASSESSMENT	QUIZ 3	
		SESSION	DECEMBER 2018	
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION 15 MINS	CLO1	10 MARKS
NAME	Bonyface anak Jonathan		CLO2	
REGISTRATION NO.	05DDT17F1031		CLO3	
PROGRAMME/ SECTION	DDT4B	TOTAL MARKS	10 MARKS	

2/10

Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO2, C3 [6 marks]

Let P(n) is the statement of $1 + 4 + 7 + 10 + \cdots + (3n - 2) = \frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.

(b) Complete the inductive step.

Question 2

CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0) = 1$ and $f(n+1) = \frac{2}{f(n)} + 3f(n)$.

Count $f(4)$.

Question 1) Salah

a) $\cancel{1+4+7+10+\ldots+(3n-2) = \frac{n(3n-1)}{2}}$

$= \cancel{1+4+7+\ldots+(3n-2)}$

$\cancel{1+4+7+\ldots+(3n-2)+(3n-2)}$

$\cancel{= \frac{n(3n-1)}{2}}$

$= \cancel{\frac{n(3n-1)+(3n-2)}{2}}$

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

$= \cancel{\frac{6n+3}{2}}$

b)

No.: .... Date: ....

a) ~~Inductive step~~ ~~suppo~~

$P(1) = (3n-2) = n\frac{(3n-1)}{2}$

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

$1 = \frac{1(2)}{2}$

$1 = 1$

~~P, sa~~ P(1) is true $1=1$

$2\frac{1}{2}$

b) $(3k-2) = k\frac{(3k-1)}{2}$

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

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

$\frac{3k^2-k+6+2}{2} = \frac{3k^2+2k+3k+2}{2}$

$3k^2+5k+2 = 3k^2+5k+2$

Q2 $f(0) = 1$ and $f(n+1) = \frac{2}{f(n)} + 3f(n)$

$f(4)$

$f(n+1) = \frac{2}{f(n)} + 3f(n)$?

$= f(4+1) = \frac{2}{f(4)} + 3f(4)$?

$f(5) = \frac{2}{46.33} + 3f4$

$+3(46.33$

$= 0.0431 + 138.99$

$F(4) = 139.033$

How?

$f(3)$

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

$=$

KEMENTERIA PENDIDIKAN MALAYSIA · POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME	DBM2033 DISCRETE MATHEMATICS
		COURSEWORK ASSESSMENT	QUIZ 3
		SESSION	DECEMBER 2018
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION: 15 MINS	CLO1: 10 MARKS
NAME	Arif Hamizan		CLO2:
REGISTRATION NO.	05DDT18F1120		CLO3:
PROGRAMME/ SECTION	DDT2A	TOTAL MARKS	10 MARKS

Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1
CLO2, C3 [6 marks]

Let P(n) is the statement of $1 + 4 + 7 + 10 + \cdots + (3n - 2) = \frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.
(b) Complete the inductive step.

Question 2
CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0) = 1$ and $f(n+1) = \frac{2}{f(n)} + 3f(n)$.
Count $f(4)$.

Question 1

b) $= 1 + 4 + 7 + 10 + \ldots + (3n-2) = \frac{n(3n-1)}{2}$

$= 1 + 4 + 7 + 10 + \ldots + (3K-2) = \frac{K(3k-1)}{2}$

show $n = k+1$

$= 1 + 4 + 7 + 10 + \ldots (3k-2) + (3(k+1)-2) = \frac{(k+1)(3(k+1)-1)}{2}$

$= \frac{K(3k-1)}{2} + (3k+3-2) = \frac{(k+1)(3k+3-1)}{2}$

$= \frac{K(3k-1)}{2} + 3k+1 = \frac{(k+1)(3k+2)}{2}$

$\cancel{= k(3k-1) + 2(3k+1) = (k+1)(3k+2)}$

$= 3k^2 - k + 6K + 2 = 3k^2 + 2k + 3k + 2$

$= 3k^2 + 5k + 2$ and $3k^2 + 5k + 2$ *

3

a) $P(1)$

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

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

$1 = 1 = \frac{1(2)}{2}$

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

$1 = 1 = 1$

= both sides equal to 1 #

2

Question 2

KEMENTERIA PENDIDIKAN MALAYSIA — POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME		DBM2033 DISCRETE MATHEMATICS
		COURSEWORK ASSESSMENT		QUIZ 3
		SESSION		DECEMBER 2018
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION	15 MINS	CLO1 10 MARKS
NAME	Syahirah binti Yaman			CLO2
REGISTRATION NO.	09DDT18F1073			CLO3
PROGRAMME/ SECTION	DDT 2A - S1	TOTAL MARKS		10 MARKS

4

Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO2, C3 [6 marks]

Let P(n) is the statement of $1 + 4 + 7 + 10 + \cdots + (3n - 2) = \frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.

(b) Complete the inductive step.

Question 2

CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0) = 1$ and $f(n + 1) = \frac{2}{f(n)} + 3f(n)$.

Count $f(4)$.

Q1 (a)

$1+4+7+10+ \ldots + (3n-2) = \frac{n(3n-1)}{2}$

If P(1) is true, then ...

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

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

$1 = \frac{1(2)}{2}$

$1 = 1$

P(1) is true because both are equal to 1.

3

(b) Inductive step:

change $1+4+7+10+\dots+(3n-2) = \frac{n(3n-1)}{2}$

to $1+4+7+10+\dots+(3n-2) = \frac{n+(3n-1)}{2}$

$\cancel{(3(1)-2)=}$

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

Q2

$f(0)=1$, $f(n+1) = \frac{2}{f(n)} + 3f(n)$. Count $f(4)$.

$f(0+1) = \frac{2}{f(0)} + 3f(0)$

$\cancel{f(1) = \frac{2}{f(0)}}$ $f(1) = \frac{2}{1} + 3(1)$

$f(1) = 2 + 3 \cancel{(1)}$

$f(1) = 2+3$

$f(1) = 5$

$f(1) = 5,$

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

$f(6) = \frac{2}{f(5)} + 3f(5)$

$\cancel{f(5-1) = 2}$

$\cancel{f(4+1) = \frac{2}{f(4)} +}$

$f(0+4+1) = \frac{2}{f(0+4)} + 3f(0+4)$

$f(5) = \frac{2}{f(4)} + 3f(4)$

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

$f(4) = \frac{2}{f(3)} + 3f(3)$

KEMENTERIA PENDIDIKAN MALAYSIA — POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME	DBM2033 DISCRETE MATHEMATICS	
		COURSEWORK ASSESSMENT	QUIZ 3	
		SESSION	DECEMBER 2018	
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION 15 MINS	CLO1	10 MARKS
NAME	ASMA ARIFAH BT. BERAWI		CLO2	
REGISTRATION NO.	05DDT18F1046		CLO3	
PROGRAMME/ SECTION	DDT2A	TOTAL MARKS	10 MARKS	

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Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO2, C3 [6 marks]

Let P(n) is the statement of $1 + 4 + 7 + 10 + \cdots + (3n - 2) = \frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.

(b) Complete the inductive step.

Question 2

CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0) = 1$ and $f(n+1) = \frac{2}{f(n)} + 3f(n)$.

Count $f(4)$.

$f(0) =$

Q1:

a) $P(1) = (3(1)-2) = \frac{1(3(1)-1)}{2}$

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

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

P(1) is true because Both sides equal to 1

3

b) $3k = 1+4+7+10+\ldots+$

$3k-2 = \frac{k(3k-1)}{2}$

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

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

Question 2

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

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

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

$1(1+3) = \frac{2}{1(3)} + 3(1)(3) = 15$

$1(1+4) = \frac{2}{1(4)} + 3(1)(4) = 20$

0

KEMENTERIAN PENDIDIKAN MALAYSIA / POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME	DBM2033 DISCRETE MATHEMATICS	
		COURSEWORK ASSESSMENT	QUIZ 3	
		SESSION	DECEMBER 2018	
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION 15 MINS	CLO1	10 MARKS
NAME	Muhamad Audi Bin Pasha		CLO2	
REGISTRATION NO.	05DDT18F1099		CLO3	
PROGRAMME/ SECTION	DDT2A	TOTAL MARKS	10 MARKS	

5

Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO2, C3 [6 marks]

Let P(n) is the statement of $1 + 4 + 7 + 10 + \cdots + (3n - 2) = \frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.
(b) Complete the inductive step.

Question 2

CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0) = 1$ and $f(n + 1) = \frac{2}{f(n)} + 3f(n)$.
Count $f(4)$.

Question 1

(a) P(1) $3(1) - 2 = \frac{1(3(1)-1)}{2}$

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

$1 = 1$ (TRUE)

What?

2

(b) $1+4+7+10+\ldots+(3k-2) = \frac{k(3k-1)}{2}$

INDUCTIVE STEP

$1+4+7+10+\ldots + (3k-2) + (3(k+1)-2) = \frac{(k+1)(3(k+1)-1)}{2}$

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

3

$k(3k-1) + 2(3k+1) = (k+1)(3k+2)$

$3k^2 - k + 6k + 2 = 3k^2 + 2k + 3k + 2$

$3k^2 + 5k + 2 = 3k^2 + 5k + 2$ #

Question 2

$f(0) = 1$

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

$f(1) = f(0+1) = \frac{2}{f(0)} + 3f(0)$

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

$= 2+3$

$= 5$

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

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

$= \frac{2}{5} + 15$

$= 15.4$

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

$= \frac{2}{15.4} + 3(15.4)$

$= 46\frac{127}{385}$

$= 46.33$

4

$f(4) = f(3+1) = \frac{2}{f(3)} + 3f(3)$

$= \frac{2}{46.33} + 3(46.33)$

$= \frac{2}{46.33} + 138.99$

$= 139.033$

KEMENTERIA PENDIDIKAN MALAYSIA / POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME		DBM2033 DISCRETE MATHEMATICS	
		COURSEWORK ASSESSMENT		QUIZ 3	
		SESSION		DECEMBER 2018	
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION	15 MINS	CLO1	10 MARKS
NAME	Freedy Fooster ak Basil			CLO2	
REGISTRATION NO.	05DDT18F1125			CLO3	
PROGRAMME/ SECTION	DDT2A	TOTAL MARKS		10 MARKS	

6

Good

Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO2, C3 [6 marks]

Let P(n) is the statement of $1 + 4 + 7 + 10 + \cdots + (3n-2) = \frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.

(b) Complete the inductive step.

Question 2

CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0) = 1$ and $f(n+1) = \frac{2}{f(n)} + 3f(n)$.

Count $f(4)$.

Answer

Question 1 (a.)

$P(n) = P(1) = \cancel{3n}(3n-2) = \frac{n(3n-1)}{2}$

insert (1) in n;

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

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

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

$1 = 1$

∴ Both side equals to 1 #

3

Question 1 (b)

$\frac{\cancel{3}\,k(3k-1)}{2} + 3(k+1) - 2 = \frac{(k+1)(3(k+1)-1)}{2}$

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

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

$\frac{3k + 2k + 1}{2} = \frac{3k^2 + 5k + 2}{2}$

3

Question 2.

Info:

$f(0) = 1$

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

Answer

(b)

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

$f(1) = \frac{2}{f(0)} + 3f(0)$

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

$f(1) = 2 + 3$

$f(1) = 5$

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

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

$f(2) = \frac{2}{5} + 3(5)$

$f(2) = \frac{2}{5} + 15$

$f(2) = 15.4$

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

$f(3) = \frac{2}{f(2)} + 3f(2)$

$f(3) = \frac{2}{15.4} + 3(15.4)$

$f(3) = \frac{2}{15.4} + 46.2$

$f(3) = 46.33$

$f(4) = \frac{2}{f(4-1)} + 3f(4-1)$

$f(4) = \frac{2}{f(3)} + 3f(3)$

$f(4) = \frac{2}{46.33} + 3(46.33)$

$f(4) = \frac{2}{46.33} + \cancel{138}\ 139$

$f(4) = 139.04$

KEMENTERIA PENDIDIKAN MALAYSIA — POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME	DBM2033 DISCRETE MATHEMATICS	
		COURSEWORK ASSESSMENT	QUIZ 3	
		SESSION	DECEMBER 2018	
JABATAN MATEMATIK, SAINS DAN KOMPUTER		DURATION 15 MINS	CLO1	10 MARKS
NAME	Frederick Jack		CLO2	
REGISTRATION NO.	05DDT18F1112		CLO3	
PROGRAMME/ SECTION	DDT2A	TOTAL MARKS	10 MARKS	

$9\frac{1}{2}$

Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO2, C3 [6 marks]

Let P(n) is the statement of $1 + 4 + 7 + 10 + \cdots + (3n - 2) = \frac{n(3n-1)}{2}$, where n is all positive integer.

(a) Show that P(1) is true.

(b) Complete the inductive step.

Question 2

CLO2, C2 [4 marks]

Suppose f is recursively defined by $f(0) = 1$ and $f(n+1) = \frac{2}{f(n)} + 3f(n)$.

Count $f(4)$.

Question 1

a) $P(1) : (3(1)-2) = \frac{1(3(1)-1)}{2}$

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

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

$1 = 1 = 1$

$2\frac{1}{2}$

b) $(3k-2) : k(3k-1)$

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

$\frac{k(3k-1)}{2} \quad \frac{\quad}{2} + (3(k+1)-2) = \frac{(k+1)(3(k+1)-1)}{2}$

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

$\frac{3k^2-k+6k+2}{2} = \frac{3k^2+2k+3k+2}{2}$

$3k^2+5k+2 = 3k^2+5k+2$

3

Question 2

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

$\frac{2}{f(0)} + 3f(0)$

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

$2 + 3$

$= 5$

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

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

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

$= 0.4 + 15$

$= 15.4$

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

$f(3) = \frac{2}{f(2)} + 3f(2)$

$= \frac{2}{f(15.4)} + 3f(15.4)$

$= \frac{2}{15.4} + 46.2$

$= 0.13 + 46.2$

$= 46.33$

$f(3+1) = \frac{2}{f(4-1)} + 3f(4-1)$

$f(4) = \frac{2}{f(3)} + 3f(3)$

$= \frac{2}{f(46.33)} + 3f(46.33)$

$= \frac{2}{46.33} + 138.99$

$= 0.043 + 138.99$

$= 139.033$

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