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$$\begin{aligned}
 3x+1-4 \cdot 3x &= -1 \\
 3x^2 \cdot 3 - 4 \cdot 3x &= 0 \\
 (3x-1)(3 \cdot 3x-1) &= 0 \\
 3x=1 &\quad 3x=-1/3 \\
 x=0 &\quad x=-1/3
 \end{aligned}$$

$$\begin{aligned}
 3) \quad 32x+1-4 \cdot 3x &= -1 \\
 32x^2 \cdot 3 - 4 \cdot 3x &= 0 \\
 (2x-5)(1-(2x-5)) &= 0 \\
 (2x-5) &= (2x-5) \\
 \sqrt{2x-5} &= 2x-5 \\
 x &= 0.78 \quad x = -1.28
 \end{aligned}$$

$$\begin{aligned}
 1. \quad 2x^2+x &= 2 \\
 2x^2+x-2 &= 0 \\
 x &= -1 \pm \sqrt{17}
 \end{aligned}$$

SECTION A

2014

PARTIAL - PARTIAL

PARTIAL - JULY EXAMS

MEMO - GRADE 12

$$\begin{aligned}
 x^2-5x-px+18-x &= 0 \\
 x^2-5x-px+18-x &= 0 \\
 6x^2-4x < 0 \\
 (-5+p)^2-4(1)(6) < 0 \\
 25+10p+p^2-24 < 0 \\
 p^2+10p+1 < 0
 \end{aligned}$$

$$\begin{aligned}
 y &= px+2 \\
 y &= x^2-5x+18
 \end{aligned}$$

$$\begin{aligned}
 4-8k > 0 \\
 k < 1/2
 \end{aligned}$$

$$3) m-8k > 0$$

$$2) a=1$$

$$\begin{aligned}
 m &= (2)^2 = 4 \\
 x &= -2 \pm \sqrt{m-8k}
 \end{aligned}$$

$$x = \sqrt{5}$$

$$\begin{aligned}
 3^n(3-1) &= 3^n(4 \cdot 3 - 6 \cdot 3^{-1}) \\
 3^n \cdot 3 - 3^n &= 4 \cdot 3^n \cdot 3 - 6 \cdot 3^n \cdot 3^{-1} \\
 3^{n+1} - 3^n &= 4 \cdot 3^{n+1} - 6 \cdot 3^{n-1}
 \end{aligned}$$

$$3^{n+1} - 3^n$$

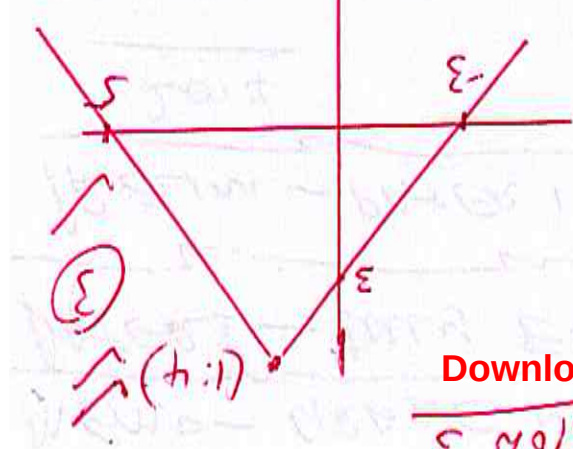
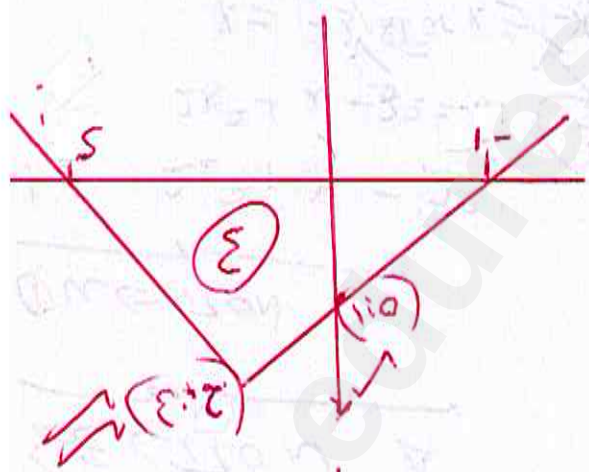
$$4 \cdot 3^{n+1} - 6 \cdot 3^{n-1}$$

③ $\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{(x+2)(x-1)} = \lim_{x \rightarrow 1} \frac{x-1}{x+2} = \frac{1-1}{1+2} = 0$

⑤ $\lim_{x \rightarrow 0} \frac{-4x+3}{x} = \frac{-4(0)+3}{0} = \frac{3}{0} = \infty$

④ $f(x) = -2x^2 + 3x$
 $f'(x) = -4x + 3$
 $f'(x) = 0 \Rightarrow -4x + 3 = 0 \Rightarrow x = \frac{3}{4}$
 $f(\frac{3}{4}) = -2(\frac{3}{4})^2 + 3(\frac{3}{4}) = -\frac{9}{8} + \frac{9}{4} = \frac{9}{8}$

Question 4



Question 3

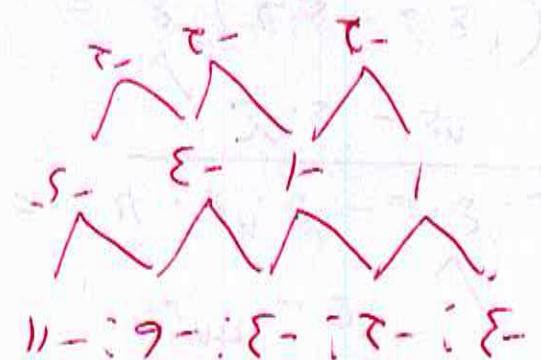
② $f'(x) = -2x + 4 = 0 \Rightarrow x = 2$
 $f(2) = -2(2)^2 + 4(2) = -8 + 8 = 0$

④ $a + b + c = -3$
 $c = -6$
 $a + b = 3$

⑤ $3a + b = 1$
 $a = -1$
 $b = 4$

② $T_{135} = -2(135) + 3 = -270 + 3 = -267$

③ $T_n = -2n + 3$



Question 2

Downloaded from
9404570

$$= 32x^3 - \frac{x^{1/2}}{3} - \frac{x^2}{5}$$

$$\therefore 1.5 = 2 + c + 14(-3 + 2c) = -40 + 28c$$

$$a = 2 + c$$

$$a \cdot 2(-3 + 2c) = -415$$

$$d = -3 + 2c$$

$$3d = -9 + 6c$$

(5)

$$b = a + 5d = -13 + 11c$$

$$a) \quad 13 = a + 2d = -4 + 5c$$

Question 8

$$\therefore \text{Total future value} = 34530.84$$

$$= 13639.93$$

$$F_2 = 2000 \left(\left(1 + \frac{10.21\%}{2} \right)^6 - 1 \right)$$

$$i = 10.21\%$$

$$\left(1 + \frac{i}{2} \right)^2 = \left(1 + 0.1 \right)^2$$

(7)

$$= 20890.41$$

$$F_1 = 500 \left(\left(1 + \frac{10.10\%}{12} \right)^{12} - 1 \right)$$

$$b = 35/4$$

$$8(-3) + 4b = 11$$

$$a = -3$$

(9)

$$\therefore 4a = -12$$

$$g(a) = 12a + 4b = -1$$

$$g'(x) = 34x^2 + 26x$$

$$f'(x) = -\frac{4}{x^2}$$

$$f(a) = 4$$

$$g(a) = 8a + 4b = -1$$

$$f(x) = \frac{x}{4} + 2 \quad g(x) = 4x^3 + 6x^2$$

Question 9

$$500 = \frac{1}{1 - \frac{1}{2}} = 2$$

(3)

$$2) \quad \sum_{k=1}^{\infty} 2(3x-1)^k \quad \text{if } x = 1/2$$

$$0 < x < 3/2$$

$$0 < 3x < 2$$

(4)

$$-1 < 3x - 1 < 1$$

$$b) \quad 2(3x-1) + 2(3x-1)^2 + \dots$$

$$p''(x) = 24x^2 - 48$$

$$p''(x) = 24x^2 - 48 = 0$$

$$24x^2 = 48$$

$$x^2 = 2$$

$$x = \pm \sqrt{2}$$

$$p'(x) = 12x^3 - 48x + 144 = 0$$

$$12x^3 - 48x + 144 = 0$$

$$x^3 - 4x + 12 = 0$$

$$x^3 - 4x^2 + 4x^2 - 4x + 12 = 0$$

$$x^2(x - 4) + 4x(x - 4) + 12 = 0$$

$$(x^2 + 4x + 12)(x - 4) = 0$$

$$(x + 2)(x + 6)(x - 4) = 0$$

$$x = -2, -6, 4$$

$$p(x) = x(12 - 2x)^2$$

$$p(x) = x(144 - 48x + 4x^2)$$

$$p(x) = 144x - 48x^2 + 4x^3$$

$$p'(x) = 144 - 96x + 12x^2$$

$$p'(x) = 12x^2 - 96x + 144 = 0$$

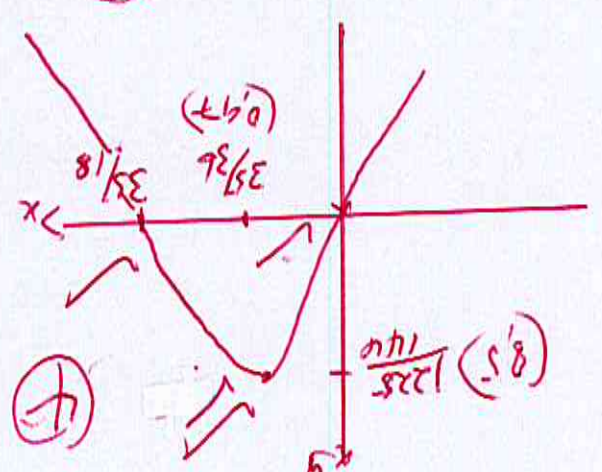
$$x^2 - 8x + 12 = 0$$

$$(x - 2)(x - 6) = 0$$

$$x = 2, 6$$

Question 10

$$x \leq 0 : 35 \leq x \leq 35/18$$



$$g'(x) = -9x^2 + 35x$$

$$g(x) = -3x^3 + 35x^2 - 7$$

$$p(x) = 0.375$$

$$4x = 0.375(2+x)^2$$

$$4x = 0.375(4 + 4x + x^2)$$

$$4x = 1.5 + 1.5x + 0.375x^2$$

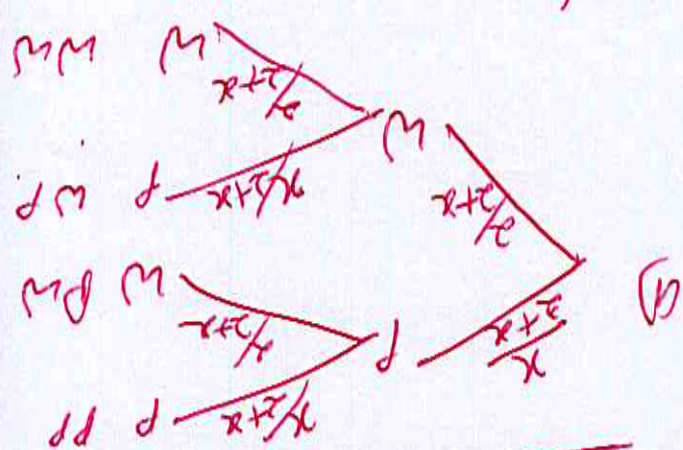
$$2.625x = 1.5 + 0.375x^2$$

$$0.375x^2 - 2.625x + 1.5 = 0$$

$$x^2 - 7x + 4 = 0$$

$$(x - 4)(x - 1) = 0$$

$$x = 4, 1$$



Question 11

$$p'(x) = k$$

$$k = -48$$

