

DAWSON COLLEGE  
Mathematics Department

FINAL EXAMINATION  
Remedial Activities of Sec IV Mathematics - (201-016-50)

Fall, 2014

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1. [5 marks] Multiply and simplify.

$$(2x - 3)(x^2 + 5) - x(x - 3)(x + 3)$$

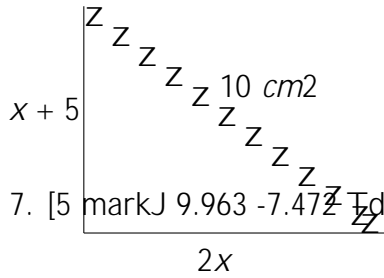
2. [5 marks] Factor completely.

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(e)  $4^{(2x-3)} = \frac{1}{2}$

7. [5 marks] If a man has \$330 in five and ten dollar bills, then how many of each does he have if he has 41 bills in total?

8. [5 marks] Find  $x$  in the right-angled triangle below.



7. [5 mark]  $9.963 - 7.472 = \text{?}$   $[(Z)]TJ 9.963 - 7.472 = \text{?}$   $Td [(Z)]TJ 3.7$   $equalit.743y$

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(a) What was the population of the city in 1995?

(b) What was the population in 2010?

(c) In which year did the population reach 35800?

13. [6 marks] The height  $h$  in meter of a ball in a soccer game,  $t$  seconds after it is kicked is given by  $h(t) = 3.5t^2 + 17.5t$ .

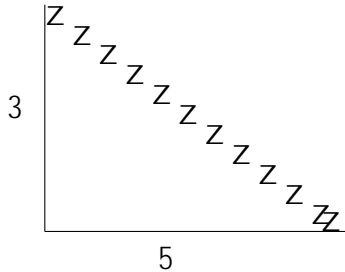
(a) When does the ball reach its maximum height?

(b) What is the maximum height?

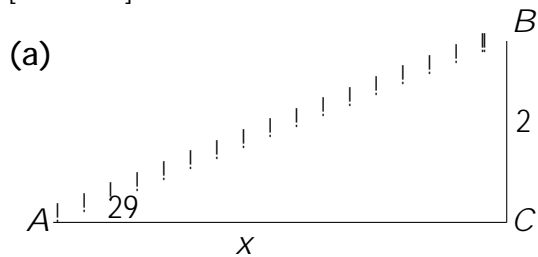
(c) After how many seconds the ball hits the ground?

14. [5 marks] Find the  $y$  intercept,  $x$  intercepts and the vertex, and sketch the graph of the parabola given by:  $y = x^2 + 4x + 3$

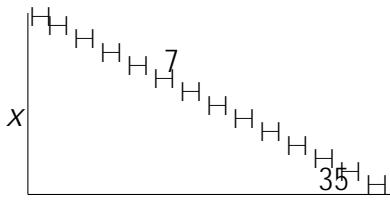
15. [5 marks] Find the six trigonometric functions of  $\theta$  in the following right-angled triangle.



16. [4 marks] Find  $x$ .



(b)



### Final Answers

1.  $x^3 - 3x^2 + 19x - 15$

2.  $4x^2(3x - 1)(x^2 + 1)$

3.  $\frac{(x+4)}{x}$

4.  $3 - 2\sqrt{2}$

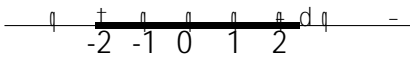
5.  $k = 1 + \frac{E - 2A}{P}$

6. (a)  $x = 4$ , (b)  $x = 2 - \sqrt{5}$ , (c)  $x = 2$ ;  $x = 1$ , (d)  $x = 3$ , (e)  $x = \frac{13}{8}$ .

7. 25 (\$10 bills), and 16 (\$5 bills).

8.  $x = 3$

9.  $2 - x < \frac{5}{2}$ ,  $[-2; 2.5)$



10. (a)  $f(-4) = 3$ , (b)  $g(h + 1) = 2h^2 + 4h + 5$  (c)  $x = 1$ ;  $x = -1$ , (d)  $\text{Domain}(f) = (-1; \frac{1}{2}]$

11. (a)  $d = \sqrt[3]{45} = 3\sqrt[3]{5}$ , (b)  $y = -2x + 2$ , (c)  $y = -\frac{1}{2}x + \frac{1}{2}$

12. (a)  $y(0) = 11200$ , (b)  $y(15) = 41950$ , (c) in 2007

13. (a)  $t = 2.5$ , (b)  $h(2.5) = 21.88$ , (c)  $t = 5$  seconds.

14. The vertex  $(-2; -1)$ , The y-intercept  $(0; 3)$ , The x-intercepts  $(-1; 0)$ ;  $(3; 0)$

15.  $\sin = \frac{3}{34}$ ;  $\cos = \frac{5}{34}$ ;  $\tan = \frac{3}{5}$ ;  $\csc = \frac{34}{3}$ ;  $\sec = \frac{34}{5}$ ;  $\cot = \frac{5}{3}$

16. (a)  $x = 3.608$ , (b)  $x = 4.015$