1K03E, Test 1

Date: 15 May 2013, Duration: 90 Minutes

Name : **Student ID** :

Instruction: Please put down your answer in the space below. At the end of the examination, you just need to hand in this page.

(1 point each)

1	2	3	4	5	6	7
8	9	10	11	12	13	14

15. (2 points)

1. Find the y-intercept of the straight line whose equation is given by $y = -2x + \frac{5}{3}$.

A. $\frac{5}{3}$,

B. -2,

C. 2,

D. -$\frac{5}{3}$,

E. 0.

2. Which of the following straight line has slope equal to $\frac{1}{2}$?
(I) $y = \frac{1}{2}x + 3$,

(II) $x + y = 0$

(III) $x - 2y + 1 = 0$.

A. (I) and (II) only,

B. (I) and (III) only,

C. (II) and (III) only,

D.(I), (II) and (III),

E. None of the above.

3. Let $f(x) = x(x-2)$. Find $f(2x)$.

A. $4x$

B. $x(x-1)$

C. $2x(x-1)$

D. $4x(x-1)$

E. $4x(x-2)$

4. Let $g(x) = \frac{x}{x+3}$ and $h(x) = \frac{1}{x}$. Find $g(h(x))$.

A. $\frac{1}{x}$

B. $\frac{3x}{1+3x}$

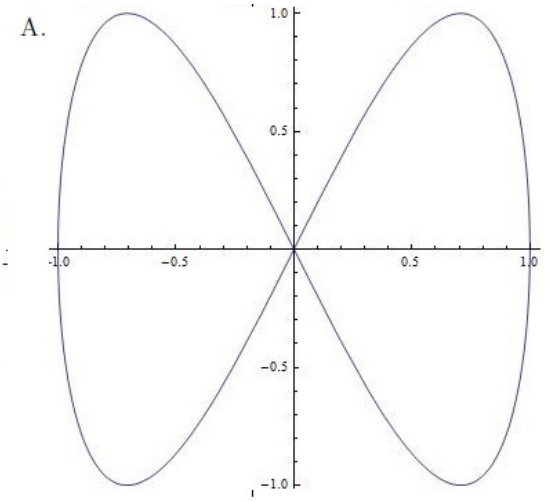
C. $\frac{1}{1+x}$

D. $\frac{1}{1+3x}$

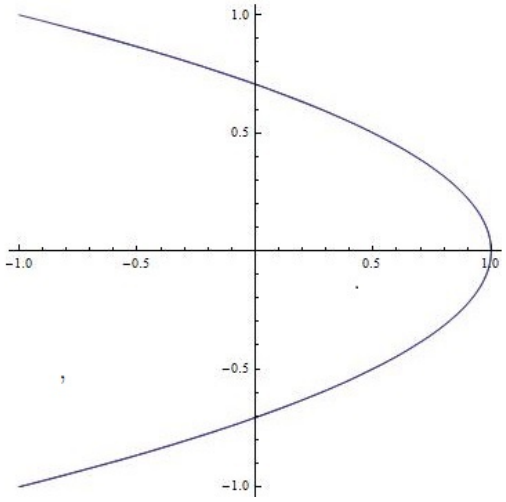
E. $\frac{x}{1+3x}$

5. Which of the following is a graph of function?

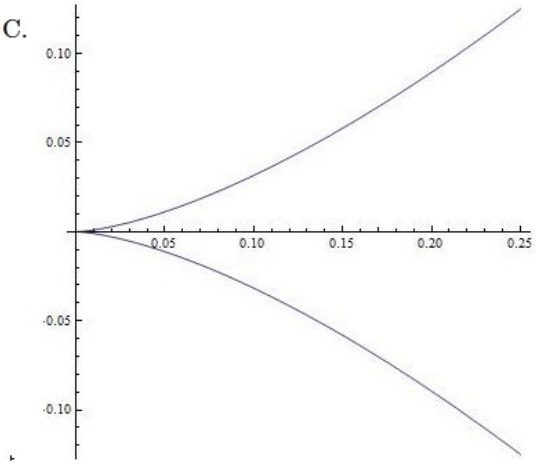
A.



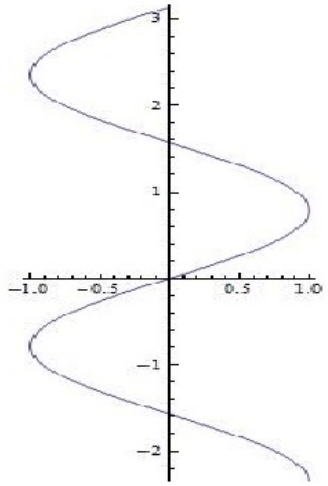
B.



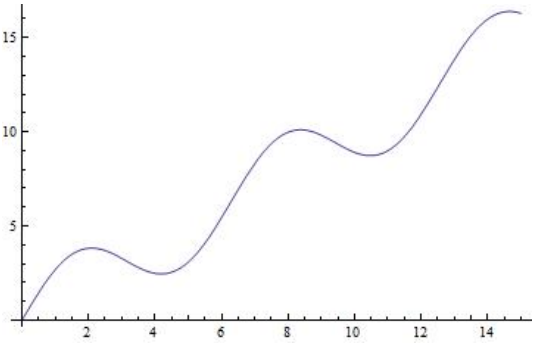
C.



D.



E.



6. Find the equation of straight line which passes through the points $(1, 2)$ and $(-2, 1)$.

A. $y = \frac{1}{3}x + \frac{1}{3}$,

B. $y = \frac{1}{3}x + 1$,

C. $y = \frac{1}{3}x + \frac{5}{3}$,

D. $y = 3x + \frac{5}{3}$

E. $y = 3x + \frac{7}{3}$

7. What is the domain of the following function?

$$\sqrt{2x - 1}$$

A. $x \geq \frac{1}{2}$,

B. $x \geq -\frac{1}{2}$,

C. $x \leq \frac{1}{2}$,

D. $x \leq -\frac{1}{2}$,

E. all real numbers except $x = \frac{1}{2}$.

8. Let $a, b, c > 0$. Simplify

$$\frac{a^{3/2}b^0}{(ab)^{1/2}c^0}.$$

A. $\frac{a}{b^{1/2}}$,
B. $\frac{a^2}{b}$,
C. $\frac{a^2}{bc}$,
D. $\frac{a}{b^3}$,
E. $\frac{a}{b^3c}$.

9. Find

$$\lim_{x \to 1} \frac{x^2 - 1}{x - 1}.$$

A. -2,
B. -1,
C. 0,
D. 1,
E. 2.

10. Find

$$\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2}.$$

A. 0,
B. 2,
C. 4,
D. 6,
E. 8.

11. Find

$$\lim_{x\to+\infty} \frac{3x^3+2x^2+1}{2x^2+5x+3}.$$

A. 0,
B. 2,
C. $\frac{3}{2}$,
D. 3,
E. $+\infty$.

12. Find

$$\lim_{x\to+\infty} \frac{2x^2}{2x^2+1}.$$

A. 0,
B. 1,
C. 2,
D. 3,
E. 4.

13. Let

$$f(x) = \begin{cases} \frac{1}{x-1}, & x < 1; \\ 11x, & x \geq 1. \end{cases}$$

Find

$$\lim_{x\to 1^+} f(x).$$

A. 0,
B. 1,
C. 2,
D. 11,
E. This limit does not exist.

14. Find

$$\lim_{x \to -1} \frac{1 - x^4}{1 + x}.$$

A. 0,
B. 1,
C. 2,
D. 3,
E. 4

15. Sketch on the *first page* the parabola $f(x) = -x^2 - 10x + 11$. Indicate the vertex, y-intercept and x-intercepts (if exist).