

Math012 Performance Opportunity #1 On-line (First exam) Multiple Choice (20 questions)

16/17 February 2009 (Solutions due by 1200 Tuesday 17 Feb 09)

Do not submit your work, only your answers in the form of 1a, 2c, 3a, etc.

1. The base 5 symbol from the first homework is  $NA$ , that is  $32_5$ . The value of this numeral in a base 10 notation is:

- a. 32
- b. 17
- c. 13
- d. 3 times 2

2. The third term in the expansion of  $(x + y)^5$  is:

- a.  $x^5$
- b.  $5x^4y^1$
- c.  $10x^3y^2$
- d.  $10x^2y^3$

3. How many terms are in the expansion of  $(p - q)^{12}$ ?

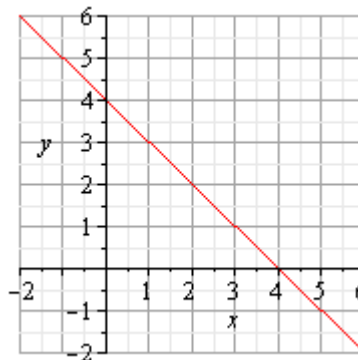
- a. 12
- b. 13
- c. 1
- d.  $p - q$

4. If  $f(x) = 2x - 4$ , then  $f(2)$  has what value?

- a. 4
- b. 2
- c. 0
- d. -4

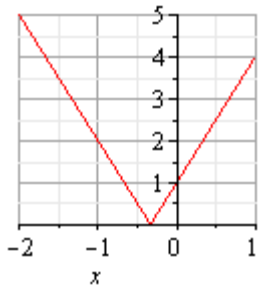
5. Consider the graph of  $y = f(x)$ , shown below. What is the numerical value of  $f(5)$ ?

- a. 1
- b. -1
- c. 0
- d. 4



6. A sketch of  $y = f(x) = |3x + 1|$  is which of the following graphs?

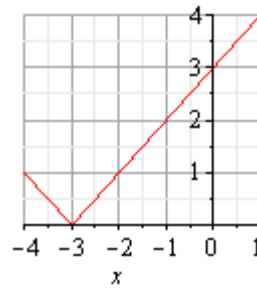
a.



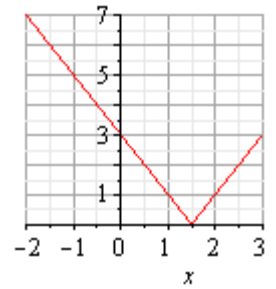
b.



c.



d.



7. A linear function,  $y = f(x)$ , with a positive slope:

- increases in  $y$  value as  $x$  increases in value.
- decreases in  $y$  value as  $x$  increases in value.
- is in the shape of a horizontal line.
- always crosses the  $y$  axis at  $x = 0$ .

8. If  $y = f(x) = x^2 - x + 1$  then  $f(-1)$  has a value of:

- 3
- 2
- 1
- 1

9. The slope of a line connecting the points  $(-3, 2)$  and  $(1, 6)$  has a value of:

- 4
- 2
- 1
- 1

10. The equation of the line passing through the points in problem 9 above has an equation of (be careful with the answer to this question):

- $y - 6 = 1(x - 1)$
- $y - 2 = 1(x + 3)$
- $y = x + 5$
- all of the above equations

11. If  $y = f(x) = \sqrt{x + 2}$ , the domain of this function is:

- all real numbers.
- only  $x = -2$ .
- all real numbers greater than or equal to  $-2$ .
- cannot be determined.

12. If  $y = g(x) = \frac{2x}{(x-1)(x+2)}$ , then the domain of this function has what two restrictions?

- a.  $x = 0$  or  $x > 0$
- b.  $x \neq 1$  or  $x \neq -2$
- c.  $x \neq 1$  or  $x \neq 2$
- d.  $x \neq -1$  or  $x \neq 2$

13. If  $|x + 2| = 6$ , then  $x$  has what numerical values?

- a.  $-2$  or  $4$
- b.  $4$  or  $-8$
- c.  $4$  or  $-4$
- d. The function has no real values.

14. If  $|x - 1| \leq 2$  then

- a.  $x = 10$
- b.  $x$  is less than  $-2$
- c.  $x$  can be any real number between negative 1 and positive 3, inclusive
- d.  $x$  is always positive

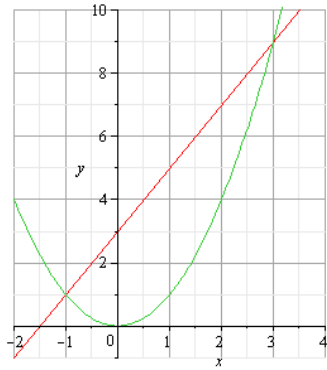
15. If  $f(x) = 3x + 1$  and  $g(x) = -x + 6$  then  $(f + g)(2) = f(2) + g(2)$  has what value?

- a. 11
- b. 9
- c.  $-1$
- d. 0

16. If  $f(x) = x^2$  and  $g(x) = -x + 1$ , then  $(f \cdot g)(1) = f(1) \cdot g(1)$  has what value?

- a. 1
- b. 2
- c. 3
- d. 0

For problems 17 and 18 consider the graphs shown below where  $f(x)$  is the parabola (in green) and  $g(x)$  is the straight line (in red):



17.  $(f + g)(1)$  has what value?

- a. 6
- b. -2
- c. -5
- d. -6

18.  $\left(\frac{f}{g}\right)(0)$  has what value?

- a. 3
- b. 2
- c. 0
- d.  $f/g$  is undefined at 0

For problems 19 and 20 consider: Cost and Revenue functions for producing and selling  $x$  units of a product are:

$$C(x) = 25500 + 15x \quad \text{and} \quad R(x) = 32x$$

19. The profit function for these function is:

- a.  $32x - 25500 - 15x$
- b.  $32x - 25500 + 15x$
- c.  $25500 + 15x - 32x$
- d.  $25500 + 15x - 32$

20. A profit will be made if:

- a.  $x > 0$
- b.  $x > 1000$
- c.  $x < 10$
- d.  $x > 1500$