Name:

QUIZ – MATH GRADE 10

1. (28%) Given the function $f(x) = -3\cos(\frac{\pi}{3}x) - 4$. Fill the blanks:
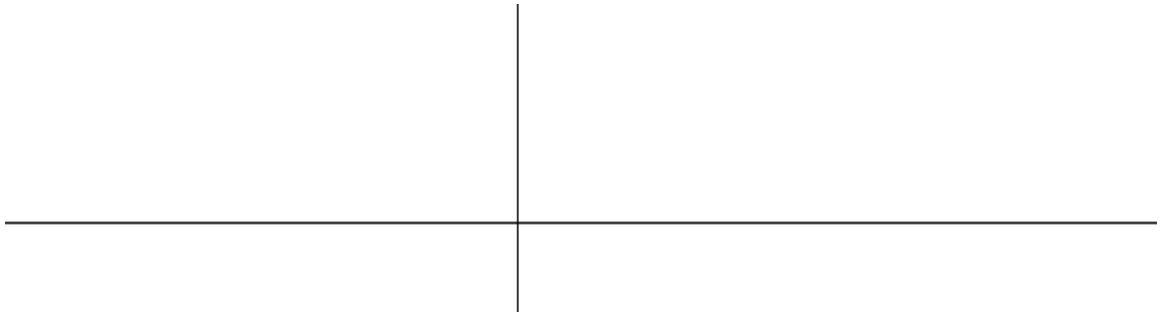
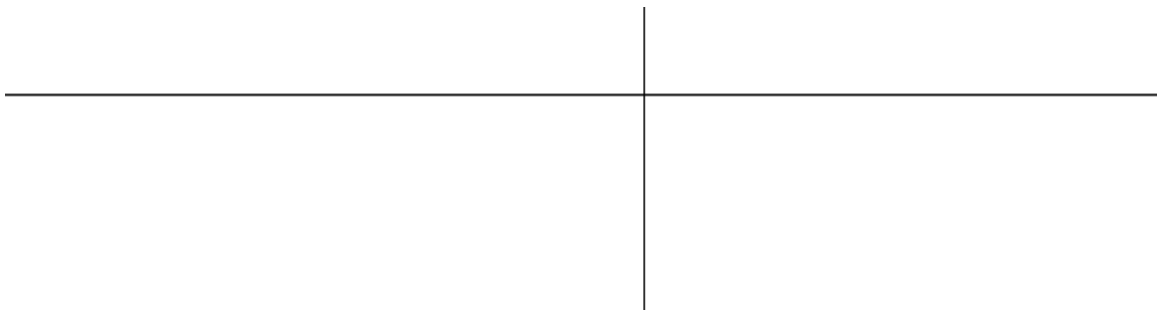a. (2%) Amplitude = _____   c. (2%) Midline is: _____

b. (5%) Period = _____   d. (4%) Range: _____

e. (6%) Sketch 1 period on each side of the y axis. **Indicate on the graph the coordinates of y int, x int max and min.**

f. (4%) $g(x) = f(x-1) + 1 =$ _____

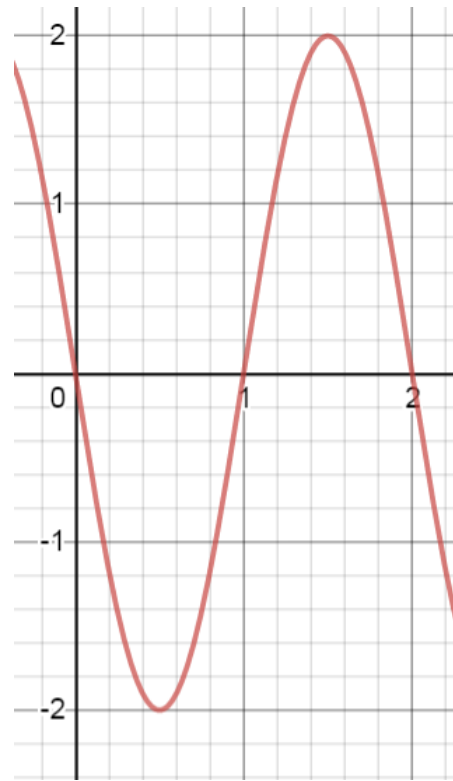g. (5%) Sketch g(x). **Write down the coordinates of y int, x int max and min.**

2. (20%) Given the function. Fill the blanks:

   a. (2%) Amplitude = _____

   b. (5%) Period = _____

   c. (2%) Midline is: _____

   d. (2%) Range: _____

   e. (6%) The function can be written in the form   f(x) = ASin (a(x + b)) + c

   A = _____   a = _____   b =_____   c = _____

   f. (3%) The function can be written in the form   f(x) = ACos (a(x + B)) + c

   B = _____

3. (10%) Given the function $f(x) = -10\cos(\dfrac{\pi}{112}(x+33))-1$. Determine the value of k for which the equation f(x) = k has no solutions.

4. (22%) A formula for the temperature T in C° of en element in an experiment at a time t hours is

$$T(t) = ASin(B(t - D)) + C,$$

It is known that on the graph the point $(-2, -3)$ is a minimum point and the point $(10, 9)$ is the following maximum point.

a. (3%) Find the value of C

b. (3%) Find the value of A

c. (6%) Find the value of B

d. (3%) Show that the value of D is 4

e. (3%) Find one instant in which the temperature <u>decreases</u> most rapidly.

f. (4%) It is known that at $t = 9$ h the temperature is k. Find the next 2 instants at which the temperature is k.

5. (20%) Given the function $f(x) = 4\tan(\frac{\pi}{3}x)$.

a. (8%) Find its domain

b. (6%) Find its x intercepts

c. (6%) Write down the equation of 2 vertical asymptotes of the function

$-f(x + 1) + 3$

BONUS (10%)

The Temprature T(t) degrees, at t hours after midnight on a particular day is given by

$$T(t) = 3Sin(2t) + 5, \qquad 0 \le t \le 4\pi$$

    (a)   Find the maximum temperature and the minimum depth of the water.

    (2)

    (b)   Find the values of t for which T(t) < 5.

    (4)

    (c)   Find the values of t for which $T(t) < 6.5$.

    (4)