**Chapter 5 TEST**

Part I – calculators allowed

**Multiple Choice [4]**

*Identify the choice that best completes the statement or answers the question.*

**\_\_\_\_ 1.** The period (in degrees) of the graph of  is

|  |  |  |  |
| --- | --- | --- | --- |
| **A.** |  | **C.** |  |
| **B.** |  | **D.** |  |

*Use the following information to answer the questions.*

The height, *h*, in metres, above the ground of a car as a Ferris wheel rotates can be modelled by the function , where *t* is the time, in seconds.

**\_\_\_\_ 2.** What is the radius of the Ferris wheel?

|  |  |  |  |
| --- | --- | --- | --- |
| **A.** | 9 m | **C.** | 19 m |
| **B.** | 18 m | **D.** | 36 m |

**\_\_\_\_ 3.** How long does it take for the wheel to revolve once?

|  |  |  |  |
| --- | --- | --- | --- |
| **A.** |  s | **C.** | 160 s |
| **B.** | 80 s | **D.** |  s |

**\_\_\_\_ 4.** What is the minimum height of a car?

|  |  |  |  |
| --- | --- | --- | --- |
| **A.** | 19 m | **C.** | 1 m |
| **B.** | 9 m | **D.** | 80 m |

**Problem**

 **5.** a) Solve$2tanx=1$, for $-π\leq x\leq 2π$ [3]

 b) Solve $2sin\left(\frac{π}{4}\left(x-6\right)\right)=1$, $0\leq x\leq 20$ [4]

 **6.** A pebble is embedded in the tread of a rotating bicycle wheel of diameter 60 cm. The wheel rotates at 4 revolutions per second. You want to determine a relationship between the height, *h*, in centimetres, of the pebble above the ground as a function of time, *t*, in seconds. [4]
a) Determine the period of the function.

b) Draw a rough shape of the graph with some key elements. (Consider that at the start, the pebble is touching the ground).

c) Determine the height as a function of *t*.

**Chapter 5 TEST**

Part II – No calculator allowed

**Multiple Choice [4]**

*Identify the choice that best completes the statement or answers the question.*

**\_\_\_\_ 7.** The range of the graph of  is

|  |  |  |  |
| --- | --- | --- | --- |
| **A.** |  | **C.** |  |
| **B.** |  | **D.** |  |

**\_\_\_\_ 8.** Which graph represents the sinusoidal function $=-sin\left(3\left(x+\frac{π}{4}\right)\right)+2$ ?

|  |  |  |  |
| --- | --- | --- | --- |
| **A.** |  | **C.** |  |
| **B.** |  | **D.** |  |

**\_\_\_\_ 9.** The graph of  can be obtained by translating the graph of 

|  |  |  |  |
| --- | --- | --- | --- |
| **A.** |  units to the right | **C.** |  units to the right |
| **B.** |  units to the right | **D.** |  units to the right |

**\_\_\_\_ 10.** Which function, where *x* is in radians, is represented by the graph shown below?



|  |  |  |  |
| --- | --- | --- | --- |
| **A.** |  | **C.** |  |
| **B.** |  | **D.** |  |

**Short Answer**

 **11.** Sketch the graph of  for two cycles and state the domain, range, period, and equations of the asymptotes. *x* is measured in radians. [4]



 **12.** Sketch the graph of $y=3cos\left(\frac{1}{2}x-\frac{π}{2}\right)-1$ for $-5π\leq x\leq 5π$. [3]

