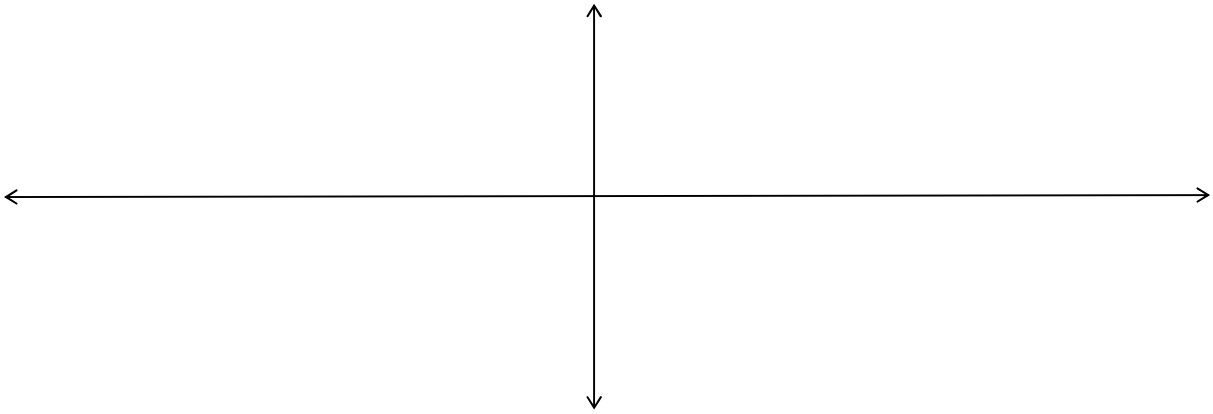
# PreCalc 30
# Practice Quiz 5a

**No Calculators Allowed for this Assessment**

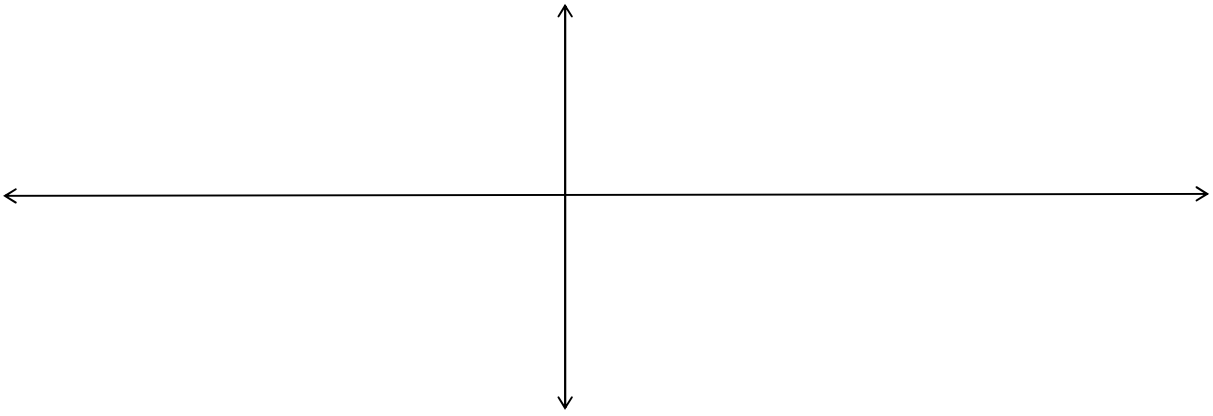
| ***30.3*** | **2** | **3** | **4** |
|---|---|---|---|
| **Outcome 5a:** Demonstrate understanding of the graphs of the primary trigonometric functions. | I can sketch the graph of sin x, cos x, and tan x over one positive and one negative period.<br><br>For trig graphs, I can determine<br>• Amplitude<br>• Period<br>• Phase shift<br>• Asymptotes and zeros<br>• Domain and range | Write equations for a given trig graph.<br><br>I can apply strategies to graph<br>Y = a sin b (x-c) + d and<br>Y= a cos b (x-c) + d | I can explain how a, b, c, d effects<br>• Amplitude,<br>• Period,<br>• Phase shift and zeros<br>• Domain and range<br><br>I can solve situational problems.<br><br>I made no errors. |

**Level 2**

1. Sketch both y = sin x and y = cos x (same graph) over the interval $-2\pi \le x \le 2\pi$.



2. Sketch y = tan x over the interval interval $-\pi \le x \le \pi$.



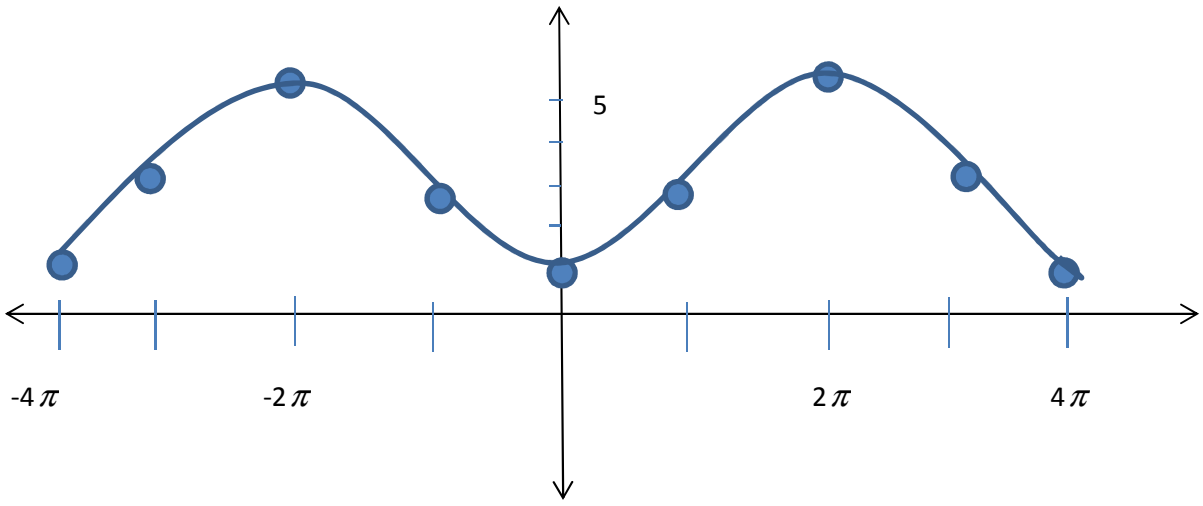
3. Fill in the chart below, based on the graphs of sin x, cos x, and tan x.

| | Amplitude | Period | Domain | Range |
|---|---|---|---|---|
| Sin x | | | | |
| Cos x | | | | |
| Tan x | | | | |

**Level 3**

4. For the following graphs determine the listed characteristics: (Assume a period start at x = 0)

a)




Amplitude:

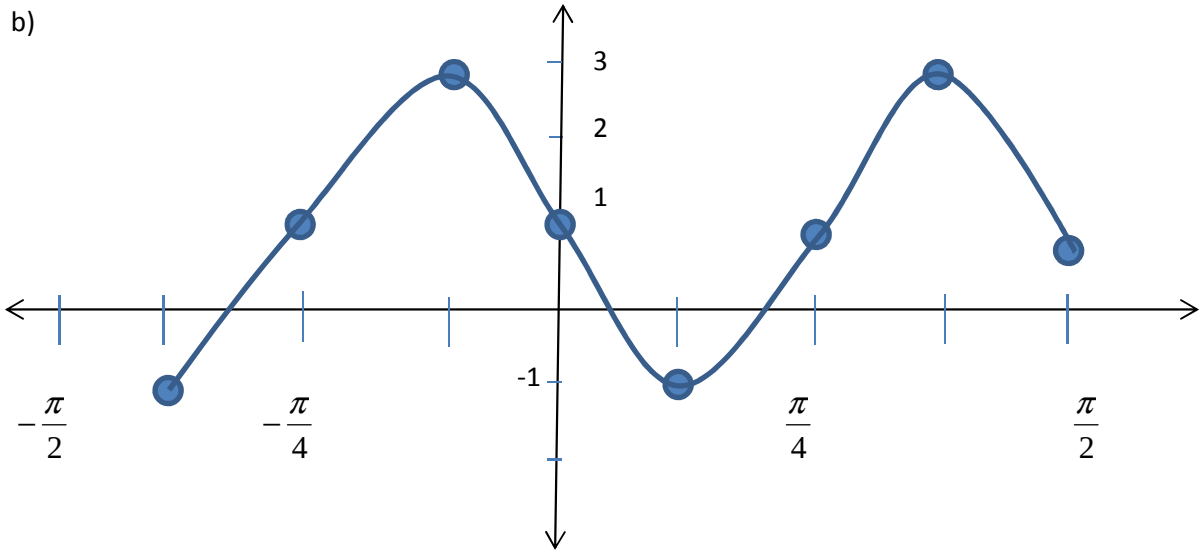
Domain:

Range:

Period:

Write the equation of the graph in form y = Acos B(x-C)+ D

b)




Amplitude:

Domain:

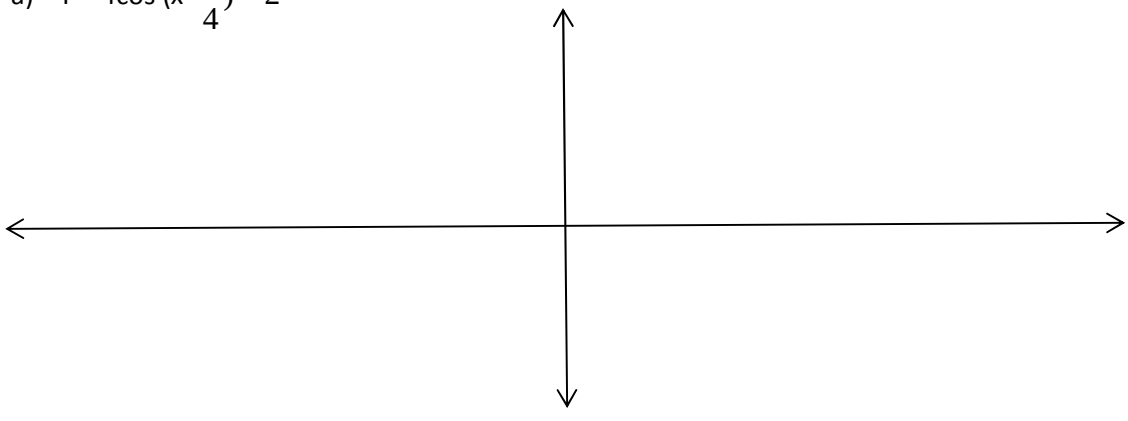
Range:

Period:

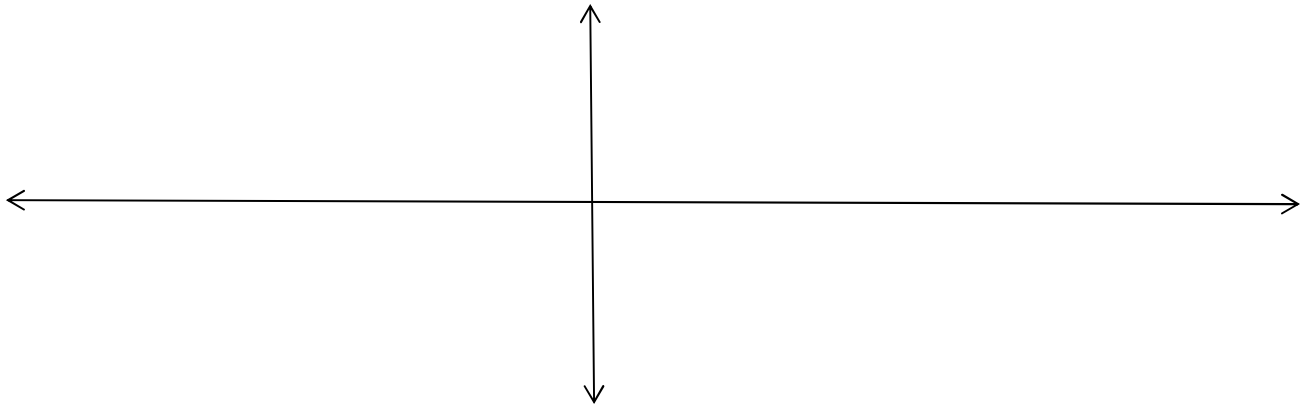
Write the equation of the graph in form y = Asin B(x - C)+ D

5. Graph each function. State the domain, the range, maximum and minimum values, x- intercepts and y- intercepts.

a) $Y = 4\cos\left(x-\frac{\pi}{4}\right) - 2$



b) $y = -3\sin 2\left(x+\frac{\pi}{2}\right)+1$



**Level 4**

6. During a 24 hour period of illness a child's temperature can be modeled by the function $T = 4\sin\frac{\pi}{24}h+37$, where T is the child's temperature in degrees Celsius and h is the number of hours that have passed since the child first became ill. Determine the child's temperature after:
   a. 3 hours
   b. 7 hours
   c. 12 hours
   d. 24 hours

7. A bicycle tire with radius 33cm rotates at a rate of 5 revolutions per second. The top of the valve stem is located 7cm above the surface of the road. Use technology.
    a. Draw a graph showing the height of the top of the valve stem above the ground level in terms of time. Assume that the valve stem is initially at its lowest position.
    b. Write an equation of a cosine function that describes the height of the top of the valve stem, y, as a function of the time, x. Use a negative value for A and a horizontal shift of 0.
    c. What is the height of the valve stem above the ground 10.11 seconds after it is at its lowest point?
    d. When does the valve stem first reach a height of 40 cm above the ground?
    e. For how many seconds in each revolution is the valve stem more than 40 cm above the ground?