Principles of Calculus Modeling: An Interactive Approach by Donald Kreider, Dwight Lahr, and Susan Diesel
Exercises for Section 1.5

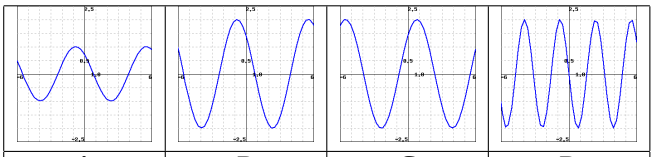
1. (1 pt)
What is $\tan\left(-\frac{\pi}{3}\right)$? Do not use a calculator – enter an exact answer.

2. (1 pt)
What is $\cos\left(\frac{\pi}{2}\right)$? Do not use a calculator – enter an exact answer.

3. (1 pt)
Express $\cos(\pi+x)$ in terms of $\sin x$ or $\cos x$.

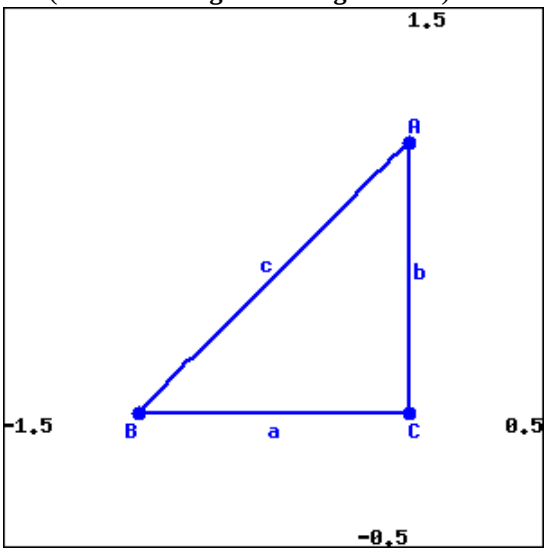
4. (1 pt)
Sketch the graph of $f(x)=\cos(\pi x)$. What is the period of this function?

5. (1 pt)
Which graph below corresponds to the function $f(x)=2\cos\left(x+\frac{\pi}{4}\right)$?



A | B | C | D

6. (1 pt)
Consider the right triangle ABC, with right angle at C, shown below. (**Click the image for a larger view.**)



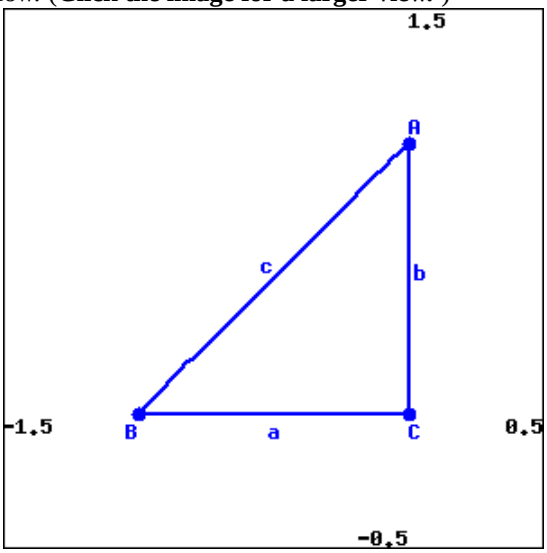
The sides opposite angles A, B, and C are a, b, and c, respectively.

Find a and b if c = 2 and B = $\frac{\pi}{6}$.

$a=$ _____

$b=$ _____

7. (1 pt)
Consider the right triangle ABC, with right angle at C, shown below. (**Click the image for a larger view.**)



The sides opposite angles A, B, and C are a, b, and c, respectively.

Find A if $a=0.5$ and $c=\frac{1}{\sqrt{(2)}}$.

$A=$ _____

8. (1 pt)
What is the period of the function $f(x)=4+\cos(2x)$?

9. (1 pt)
Sketch the graph of $f(x)=-\sin(3x)$. What is the amplitude of this function?

10. (1 pt)
Is the function $f(x)=\sin(-6x)+x^3$ **odd**, **even**, or **neither**? Type one of these three words in the answer box, without quotes.

11. (1 pt)
The position of a particle moving on the x-axis is given by $x(t)=(\cos(\frac{\pi}{5}t-\frac{\pi}{2}))^2$.

What is the position of the particle when $t=0$?

$x=$ _____

Determine the next time t at which the particle returns to this position.

$t=$ _____

12. (1 pt)

The height of a swinging pendulum is given by $y(t) = 1 - \sin(6\pi t)$.

What is the height of the pendulum when $t = 0$?

$y =$ _____

Determine the next time t at which the pendulum attains the same height.

$t =$ _____

13. (1 pt)

What is the value of $\dfrac{1}{1+\sin x} + \dfrac{1}{1-\sin x}$ when $x = \dfrac{\pi}{6}$? Do not use a calculator – enter an exact answer.

_____

14. (1 pt)

Find the smallest positive value of x such that $\dfrac{1}{1+\sin x} + \dfrac{1}{1-\sin x} = \dfrac{8}{3}$.

$x =$ _____

15. (1 pt)

Find the smallest positive solution to the equation $\sin^2(x) - 1.2\sin(x) + 0.35 = 0$.

$x =$ _____

16. (1 pt)

Is the function $f(x) = 19x^{10} + \cos(13x^{11})$ **odd**, **even**, or **neither**? Type one of these three words in the answer box, without quotes.

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