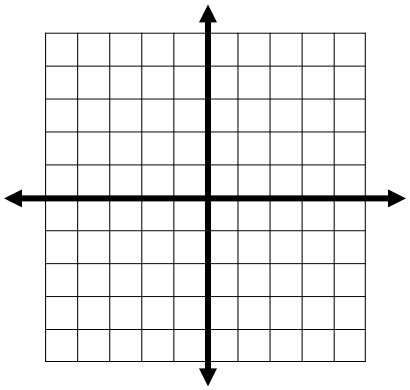
AFM Midterm Review I Fall 2016

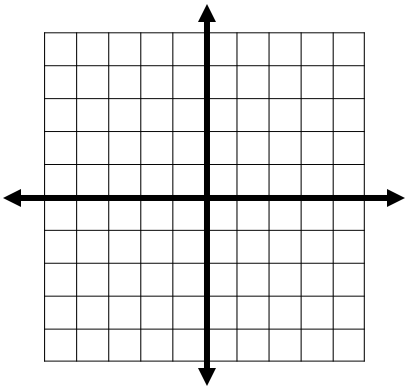
1. Determine if the relation is a function. $\{(1,6),(-3,3),(5,-1)\}$

2. Determine the domain of the function $h(x)=\dfrac{7x}{x(x^2-4)}$.

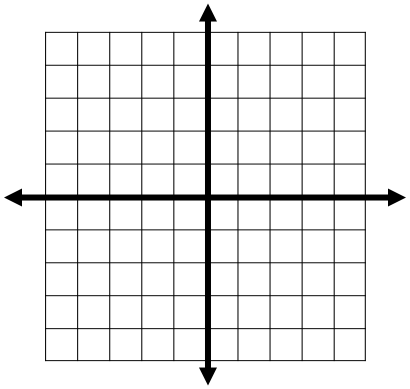
3. Sketch the graph of $f(x)=-|x-2|$



4. Sketch the graph of $f(x)=-[x+2]$



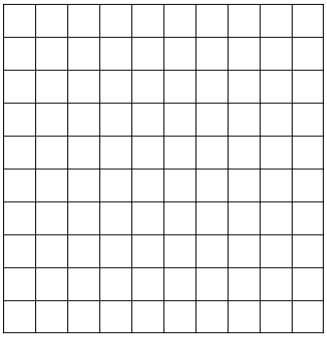
5. Sketch the graph of $f(x)=[x]+1$



6. Find the vertical, horizontal, and slant asymptotes, if any, for $f(x)=\dfrac{2x^3+2x^2-7x-12}{x^2-x-2}$.

7. Given that one zero is -2, find all the zeroes of $P(x)=x^3+11x^2+38x+40$

8. Find the number of complex roots of the equation $-x^3-4x^2-3x=0$. Then find the roots and graph the related function.



9. Find the discriminant and determine the number and kind of roots for $4x^2-4x-24=0$.

10. Divide using synthetic division: $(x^3-4x^2-16x+64)\div(x+4)$.

11. Use the rational-root theorem to find the roots of the equation $24x^3+14x^2-x-1=0$.

12. Find all the zeros of the function for $f(x)=6x^4+5x^3-12x^2-5x+6$.

13. Convert $30°$ to radians.

14. Convert $\frac{5}{6}\pi$ to degrees.

15. Find the least positive angle measurement that is coterminal to $-\frac{4}{3}\pi$.

16. What is the reference angle for $-\frac{53\pi}{10}$ radians?

17. For a circle of radius 4 feet, find the arc length s subtended by a central angle of $30°$.

18. Find the area of a sector with a central angle of $\frac{8\pi}{9}$ and a radius of 8.2 m. Round the answer to one decimal place.

19. Find $\sin\theta$ if θ is an angle is standard position and the point with coordinates $(4,3)$ lies on the terminal side of the angle.

20. Find $\cos\theta$ if θ is an angle in standard position and the point with coordinates $(3,-4)$ lies on the terminal side of the angle.

21. Find $\tan\theta$ if θ is an angle in standard position and the point with coordinates $(-12,5)$ lies on the terminal side of the angle.

22. Find the values of the three trigonometric functions of an angle in standard position and the point with coordinates $(2,4)$ lies on the terminal side.

23. Find the values of the three trigonometric functions of an angle in standard position if the point with coordinates $(-2,0)$ lies on the terminal side.

24. Find $\cos(-\frac{7}{6}\pi)$.

25. Use a calculator to approximate the value of $\cos(-113°)$ to four decimal places.

26. In right triangle ABC, $A = 15°$ and $c = 37$. Angle C is the right angle. Solve the triangle. Round angle measures to the nearest minute and side measures to the nearest tenth.

27. In right triangle ABC, $B = 15°$ and $a = 13$. Angle C is the right angle. Solve the triangle. Round angle measures to the nearest minute and side measures to the nearest tenth.

28. In right triangle ABC, $b = 11$ and $a = 18$. Angle C is the right angle. Solve the triangle. Round angle measures to the nearest minute and side measures to the nearest tenth.

29. In right triangle ABC, $a = 120$ and $c = 140$. Angle C is the right angle. Solve the triangle. Round angle measures to the nearest minute and side measures to the nearest tenth.

30. In right triangle ABC, $A = 78°$ and $c = 82$. Angle C is the right angle. Solve the triangle. Round angle measures to the nearest minute and side measures to the nearest tenth.

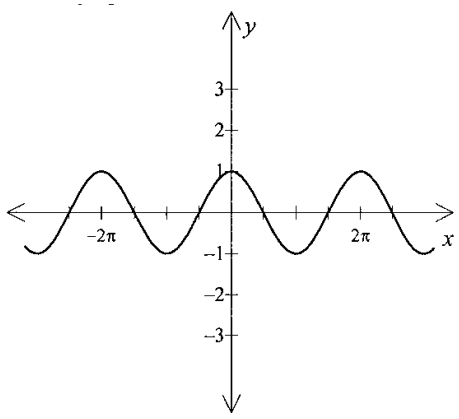
31. How many triangles are there that satisfy the conditions $a = 7, b = 8, A = 70°$?

32. Solve triangle ABC given that $A = 54°, B = 56°$ and $b = 73$.

33. Given a triangle with $b = 5, c = 9$, and $A = 110°$, what is the length of a? Round the answer to two decimal places.

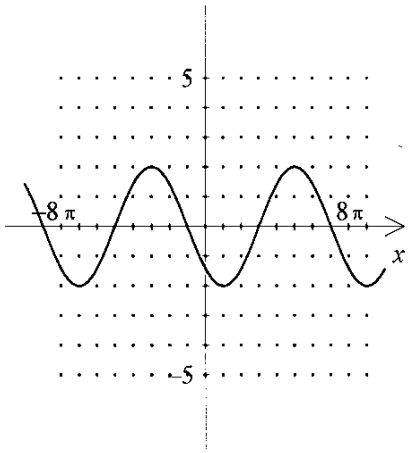
34. Find the area of the triangle with $A = 98°, b = 2$ feet and $c = 7$ feet.
Round your answer to two decimal places.

35. Use the graph of the cosine function below to find the values θ of for which $\cos\theta = -1$.



36. State the amplitude and period for the function $y = -5\sin\frac{1}{5}\theta$.

37. Find a cosine function of the form $y = Acos\ (Bx + C), A > 0$, a portion of whose graph is:



38. The function below determines the amount of yearly income tax a person must pay based on the amount of money they earn in a year.

$$T(x) = \begin{cases} 0.10x & 0 \le x < 12{,}750 \\ 0.07(x - 12{,}750) + 765 & 12{,}750 \le x < 60{,}000 \\ 0.0775(x - 60{,}000) + 4{,}072.50 & x \ge 60{,}000 \end{cases}$$

a) Describe what x and T(x) represent in the context of the problem.

b) Write the domain and range in interval notation.

c) Explain your tax rate (i.e. the % you pay) if you make:
i) less than $12,750 per year

ii) $12,750 to $59,999 per year

iii) $60,000 per year or more

Make sure to review your Unit Circle. Be ready for no calculator questions on Regular Trigonometry

AFM Fall 2016 Graphing Calculator Active
Midterm review II

1. Solve for x: $5x^3+13x^2-5x+3=0$.

2. Determine the equation whose roots are 2, 9 and -4.

3. Suppose $f(x)=x^3-2x^2+13x+k$ The remainder when *f*(x) is divided by (x + 1) is -8. What is the remainder when *f*(x) is divided by (x – 1)?

4. Which of the following is NOT a factor of x^4-3x^2+1 ?

   A. x + 1 B. x – 1 C. 2x – 1

5. Write the polynomial equation of least degree for the roots 2*i*, -2*i* and -4.

6. Find the domain for: $y=\dfrac{2x-1}{4x^2-4x+1}$

7. Find all asymptotes and holes for #6.

8. Find the x and y intercepts of $y=\dfrac{3(x-4)(x+5)}{(x+7)(x-9)}$.

9. Find the smallest positive co-terminal angle with an angle measuring -213º.

10. Change -62º 11’ 45” to radian measure. Round answer to 4 places.

11. Change 1.24 radians to degrees. Round to 4 places.

12. Find the degree measure to the nearest tenth, of a central angle whose intercepted arc measures 16in for a circle with radius 12in.

13. Find the area to the nearest tenth, of a sector whose central angle measures 105º if the radius of the circle is 4.2 in.

14. Find the reference angle for an angle measuring -124º.

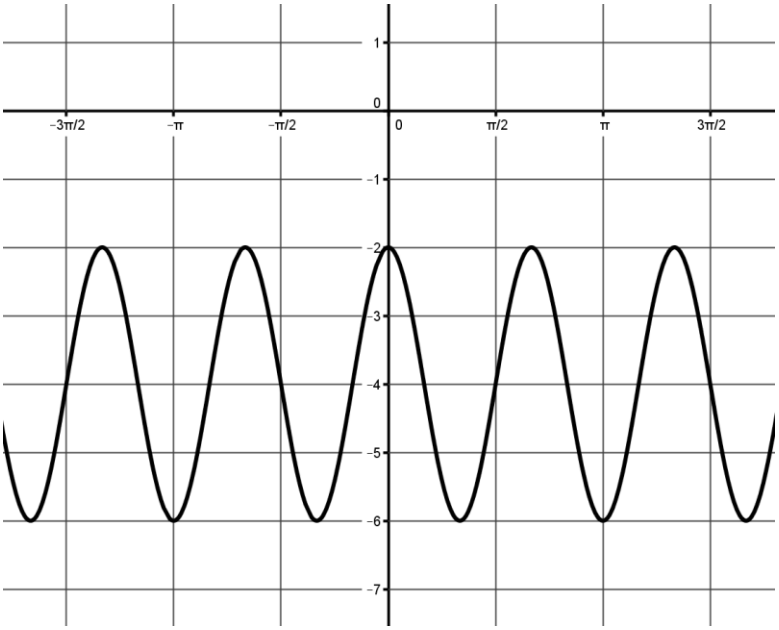
15. Describe the transformations in order then graph: $f(x)=-2|x+3|-4$

16. Describe the transformations in order then graph: $y=\left[\frac{1}{3}x\right]$

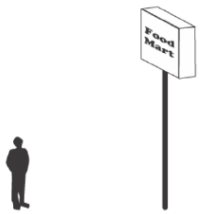
17. Find the amplitude, period, phase shift and vertical shift: $y=-\frac{1}{3}\cos\left(\frac{1}{2}x-\frac{3}{2}\right)+5$

18. Find the amplitude, period, phase shift and vertical shift: $f(x)=4\sin(3x+2)$

19. Write a sine and cosine equation for the following graph:



20. The sign for a resturant is mounted on a pole. From a position 5 m from the base of the pole, Mike has to look up 42° to see the bottom of the sign, and 52° to see the top of the sign. How tall is the sign?



21. Graph on graph paper:

$$f(x)=\begin{cases}x^2; & x<-2\\ -2; & -2\le x<1\\ x+1; & x\ge 1\end{cases}$$