# MTH 112 Midterm Review

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1. Sketch $-330°$ in standard position, then convert it to radians.

2. Sketch $\frac{-5\pi}{4}$ in standard position, then convert it to degrees.

3. Find the angle coterminal with $4321°$ such that $0 \leq \theta < 360°$. Sketch θ in standard position.

4. Find the angle coterminal with $\frac{25\pi}{6}$ such that $0 \leq \theta < 2\pi$. Sketch θ in standard position.

5. Sketch a right triangle with an acute angle θ. Evaluate the other five trigonometric functions at θ if $\csc \theta = \frac{-41}{9}$.

6. Sketch a right triangle with an acute angle θ. Evaluate the other five trigonometric functions at θ if $\cot \theta = \frac{21}{20}$.

7. Find the exact value of $\csc \frac{7\pi}{4}$.

8. Find the exact value of $\sec \frac{2\pi}{3}$.

9. Find the exact value of $\cot \frac{5\pi}{3}$.

10. Find the exact value of $\tan 3\pi$.

11. Find the exact value of $\csc(-120°)$.

12. Find the exact value of $\sec(240°)$.

13. Find the exact value of $\cot(150°)$.

14. Find the exact value of $\tan(210°)$.

15. Find the exact values of the other five trigonometric functions at θ if $\tan \theta = 3$ and $\cos \theta > 0$. Draw a right triangle and label the angle θ to help.

16. Find the exact values of the other five trigonometric functions at θ if $\sin \theta = -0.2$ and $\tan \theta > 0$. Draw a right triangle and label the angle θ to help.

17. Find the exact values of the other five trigonometric functions at θ if $\sec \theta = -2$ and $\cot \theta > 0$. Draw a right triangle and label the angle θ to help.

18. Let $f(x) = \dfrac{x^2 + 1}{x^{16} \tan x}$. Determine if the function is even, odd, or neither.

19. Let $f(x) = \dfrac{|x| \cos x}{\sin x} \tan x$. Determine if the function is even, odd, or neither.

20. Draw a Cartesian plane, label your axes, and provide a scale. On your axes, sketch at least two periods of the function $f(x) = -3 \cos \left(3x + \frac{\pi}{2} \right) - 1$.

21. Draw a Cartesian plane, label your axes, and provide a scale. On your axes, sketch at least two periods of the function $f(x) = 4 \sin(\pi x - 2\pi) + 1$.

22. Draw a Cartesian plane, label your axes, and provide a scale. On your axes, sketch at least two periods of the function $f(x) = -2\tan\left(x - \frac{\pi}{4}\right)$.

23. Draw a Cartesian plane, label your axes, and provide a scale. On your axes, sketch at least two periods of the function $f(x) = \frac{1}{2}\tan(2x - \pi) + 1$.

24. Evaluate $\arcsin\frac{1}{2}$.

25. Evaluate $\sin^{-1} 1$.

26. Evaluate $\cos^{-1}\frac{-\sqrt{3}}{2}$.

27. Evaluate $\arctan(1)$.

28. Evaluate $\tan^{-1}(\sqrt{3})$.

29. A triangle is depicted below. In this triangle, a is opposite α, b is opposite θ, and c is opposite a right angle.
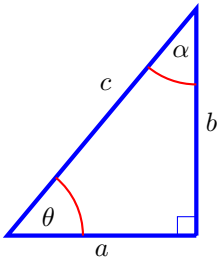
    a. Solve the triangle if $a = 3$ and $b = 4$. Give an exact value of c, and round each of θ and α to the nearest tenth of a degree.

    b. Solve the triangle if $b = 10$ and $\alpha = \frac{\pi}{7}$. Round a and c to the nearest hundredth, and give an exact value of θ in radians.

    c. Solve the triangle if $c = 26$ and $\alpha = 45°$. Give each of θ, a, and b exactly.