

More Review for the Final Exam

1. Given that $\sec x = 4$ and $-\pi < x < 0$ find

- (a) $\tan x$
- (b) $\sin(x + \pi)$
- (c) $\cos(2x)$

2. Given that $\cot x = 7$ and $0 < x < \pi$ find

- (a) $\sin x$
- (b) $\cos(x - \pi/3)$
- (c) $\sin(x/2)$

3. Prove the following identity:

(a)

$$\frac{\sin^2 x}{-\tan^2 x} = \sin\left(\frac{\pi}{2} - x\right) \cos(x + \pi)$$

(b)

$$\frac{1 - \csc^2 x}{\sin x} = \csc^3(x)(\sin^2 x - 1)$$

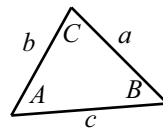
4. Put the following complex number into polar form using Euler e -notation ($re^{i\theta}$).

$$(2 + 2\sqrt{3}i)^5$$

5. Find all roots of $f(x)$ given that $f(3 + 2i) = 0$ where

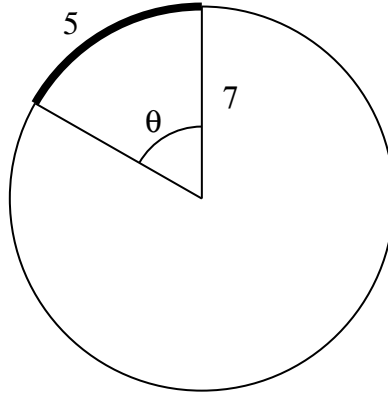
$$f(x) = x^4 - 6x^3 + 12x^2 + 6x - 13$$

6. Given that $A = 15^\circ$, $B = 45^\circ$ and $c = 4$ in the following triangle, find C , a , and b .

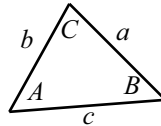


7. If the point $(-3, 7)$ is on the terminal side of an angle θ , what are the values of $\sin \theta$, $\sec \theta$, and $\cos(\theta + \frac{7\pi}{6})$?

8. Give the measure of θ in both radians and degrees where θ is pictured below.



9. Compute $\sin(\arctan(5))$
10. List all the 5th roots of unity and plot them in the complex plane.
11. Given that $A = 60^\circ$, $b = 2\sqrt{6}$ and $a = 4$ in the following triangle, find C and B .



12. Find the rule of f^{-1} where $f(x) = 33 \log_5(4x - 90)$
13. Suppose $f(x) = -3 \sin(4x + \pi/4)$. List the amplitude and period of f and sketch a graph of f .
14. Find all solutions to the following equation.

$$\cos(2x) = \cos(x) - 1$$

15. Evaluate the following expression

$$\frac{\sin\left(\frac{\pi}{3}\right) \tan\left(\frac{2\pi}{3}\right)}{(i)^6} - \cos\left(\frac{\pi}{6}\right)$$