Show all work.

The law of sines: $\dfrac{SinA}{a} = \dfrac{SinB}{b} = \dfrac{SinC}{c}$.

One version of the law of cosines: $a^2 = b^2 + c^2 - 2bc\cos A$.

reference angle	0	$\dfrac{\pi}{6}$	$\dfrac{\pi}{4}$	$\dfrac{\pi}{3}$	$\dfrac{\pi}{2}$	π	$\dfrac{3\pi}{2}$
	0	30	45	60	90	180	270
sin	0	$\dfrac{1}{2}$	$\dfrac{\sqrt{2}}{2}$	$\dfrac{\sqrt{3}}{2}$	1	0	−1
cos	1	$\dfrac{\sqrt{3}}{2}$	$\dfrac{\sqrt{2}}{2}$	$\dfrac{1}{2}$	0	−1	0
tan	0	$\dfrac{\sqrt{3}}{3}$	1	$\sqrt{3}$	–	0	–

$$\sin 2x = 2\sin x\cos x$$

$$\cos 2x = \cos^2 x - \sin^2 x$$

$$\sin\frac{x}{2} = \pm\sqrt{\frac{1-\cos x}{2}}$$

$$\cos\frac{x}{2} = \pm\sqrt{\frac{1+\cos x}{2}}$$

1. Find the domain of the function $f(x)=\sqrt{x+2}+\sqrt{2-x}$.

2. What changes need to be made to be made to the graph of $y=4^x$ to obtain the graph of $y=4^{x-3}+1$?

3. $f(x)=\sqrt{x-15}$ and $g(x)=x^2+2x$.

3a. Write $g\circ f(x)$.

3b. Find the domain of $g\circ f(x)$.

4. $f(x)=\sqrt{3-x}$, $x\leq 3$. Find $f^{-1}(x)$.

*5. Consider $f(x)=\dfrac{2x^2+8x+6}{x^2-2x}$.

5a. Find the y-intercept.

5b. Find the x-intercept(s).

5c. Find the horizontal asymptote(s).

5d. Find the vertical asymptote(s).

6. Find the exact value of $\cos(-225°)$.

7. Find the exact value of $\cos\left(\dfrac{7\pi}{4}\right)$.

8. Find the values of the six trigonometric functions of θ from the information given: $\cot\theta = \dfrac{3}{4}$ and $\cos\theta < 0$.

9. Solve the triangle with $A = 48°$, $C = 57°$, $b = 47$.

10. Solve the triangle with $a = 90$, $b = 70$, $c = 40$.

11. Find the amplitude, period, and phase shift of $y = -3\sin\left(\dfrac{1}{2}x - \dfrac{\pi}{4}\right)$.

12. Verify the identity $\dfrac{1+\sec x}{\sin x + \tan x} = \csc x$.

*13. Solve $4\sin^2 x - 3 = 0$.

14. Find the exact value $\cos(112.5°)$

15. Find the exact value of $\sin^{-1}\left(\tan\dfrac{3\pi}{4}\right)$ without using a calculator.

16. Evaluate $\log_2 128$.

17. Evaluate $e^{1+\ln 5}$.

18. Rewrite as one logarithm: $5\ln x - \dfrac{1}{2}\ln(3x-4) - 3\ln(5x+1)$.

*19. Solve for x: $\log_3(3x) = \log_3 x + \log_3(4-x)$.

*20. Solve for x: $e^{2x} + 2e^x - 15 = 0$.