

due August 5

Calculus AB  
Test.

I have neither given nor received help on this exam.

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I. Find the EXACT value.

1)  $\cos(-15^\circ)$

2)  $\tan\left(\frac{7\pi}{12}\right)$

3)  $\sin 70^\circ \cos 25^\circ - \cos 70^\circ \sin 25^\circ$

4)  $\cos(\sin^{-1}(0) + \cos^{-1}(\frac{1}{2}))$

5)  $\tan(\sin^{-1}(0) + \sin^{-1}(\frac{1}{2}))$

6) Find  $\sin 2\theta$  if  $\cos \theta = -\frac{1}{2}$   $\frac{\pi}{2} \leq \theta \leq \pi$

II Find two coterminal angles between 0 and  $2\pi$ .

1)  $2355^\circ$

2)  $-\frac{57\pi}{6}$

III Answer completely.

- 1) Which trigonometric functions are even and which are odd?
- 2) What are the periods of the six trigonometric functions?
- 3) What is a reference angle and how do you find it?
- 4) List 5 characteristics of the unit circle.

IV Find the amplitude, period, phase shift, midline and transformations. Write none if a value does not exist.

1)  $y = 2 - 5 \cos\left(2x + \frac{3\pi}{7}\right)$

- a) amplitude
- b) period
- c) phase shift
- d) midline
- e) transformations

2)  $y = 3 \sin\left(\frac{1}{6}x - \frac{\pi}{4}\right)$

- a) amplitude
- b) period
- c) phase shift
- d) midline
- e) transformations

V Find the period, phase shift and transformations. Write none if a value does not exist.

1)  $y = -\frac{4}{3} \tan\left(8x - \frac{\pi}{3}\right)$

- a) period
- b) phase shift
- c) transformations

VI Find the exact value.

1)  $\sec x = \frac{7}{5}$  where  $270^\circ < x < 360^\circ$

a)  $\sin x =$

c)  $\tan x =$

e)  $\cot x =$

b)  $\cos x =$

d)  $\csc x =$

VII Solve for  $x$  where  $0 \leq x \leq 2\pi$

1)  $2\sin^2 x - \sin x = 0$

2)  $2\cos 3x - 1 = 0$

3)  $2\sin x \tan x - \tan x = 1 - 2\sin x$

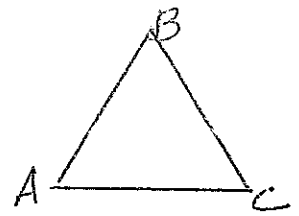
4)  $2\sin^2 x - \cos x = 1$

5)  $2\sin^2 x + 5\sin x + 3 = 0$

6)  $\tan x \sin x + \sin(-x) = 0$

VIII Find the area of the triangle.

1)  $a = 25$   $b = 24$   $c = 7$



2)  $\angle C = 37^\circ$   $c = 12$   $b = 5$

IX Find the exact value.

1)  $\cos^{-1}(\sqrt{3} \sin \frac{\pi}{6})$

2)  $\tan(2 \tan^{-1} \frac{5}{13})$

3)  $\cos(\sin^{-1} \frac{5}{13} - \cos^{-1} \frac{4}{5})$

X Determine if the function is even, odd or neither. Why?

1)  $f(x) = \sin x + \cos x$

2)  $f(x) = \sin x \cos x$

3)  $f(x) = \cos(\sin x)$

4)  $f(x) = \sin(\cos x)$

XI Solve for x.

$$1) \log(4x+7) = \log(2x-1) + \log 3$$

$$2) 2 \log(x-3) + 1 = 5$$

$$3) \log_2(2x-1) - \log_2(x+2) = -1$$

$$4) 4^{x+3} \cdot 2^x = \frac{1}{8}$$

$$5) 4 - e^{2x-3} = 7$$

$$6) 2 \log_2(x-3) = \log_2 8 + 3$$

$$7) 3^{2x+4} = 4^{x-2}$$

$$8) 2e^{2x} + 5e^x - 3 = 0$$

$$9) 5^{\frac{x+1}{3}} = \sqrt{5}$$

$$10) e^{x^2-4x} = \frac{1}{e^{2x}}$$

$$11) \ln(x-9)^4 = 12$$

$$12) \ln(x-5) - \ln(x+4) = \ln(x-1) - \ln(x+2)$$

$$13) 8^{x-3} = 16^{x+1}$$

$$14) 5 \cdot 2^{2x} - 3 \cdot 2^x - 2 = 0$$

$$15) \left(\sqrt[3]{2}\right)^{2-x} = 2^{x^2}$$

$$16) \log \sqrt[3]{x^2 - 9x} = \frac{1}{3}$$

$$17) \log_3 x^{\log_3 x} = 4$$

$$18) \frac{\ln(x+3)}{\ln(x+1)} = 2$$

II Find the domain. Use interval notation.

$$1) \log(4-3x) + 2 \log(x+2)$$