

Name: _____

Directions: Complete all questions and **show all applicable work**. Partial credit will be given. All questions are equally weighted (10pts each).

1.) Draw the following angles in standard position:

a.) 60°

b.) $\frac{2\pi}{3}$

c.) 400°

d.) $-\frac{\pi}{2}$

2.) If an analog clock displays 10:15, what is the angle between the hands?

3.) The White House is located at is located at $38^\circ 53' 52''$ N north of the equator and $77^\circ 2' 13''$ west of the Prime Meridian. Express these coordinates in degrees only. To maintain reasonable accuracy, **round to the nearest ten-thousandth**. (ex. 12.3456°)

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4.) If $\cos \theta = -\frac{4}{5}$ and $\tan \theta > 0$, find $\sin \theta$. Express your answer as a fraction.

5.) Find the reference angle for each of the following:

a.) $\frac{\pi}{4} =$ _____

b.) $120^\circ =$ _____

c.) $\frac{4\pi}{3} =$ _____

d.) $-30^\circ =$ _____

6.) BONUS: [5pt] If $\tan \theta = -1$ and $\cos \theta > 0$, find $\sin \theta$. Express your answer exactly as a fraction.

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7.) Compute $\sin 30^\circ$. Express your result exactly as a fraction, not as a decimal (ie. do not use your calculator).

8.) Compute $\cos \frac{\pi}{4}$. Express your result exactly as a fraction, not as a decimal (ie. do not use your calculator).

9.) Compute $\tan \frac{3\pi}{4}$. Express your result exactly as a fraction, not as a decimal (ie. do not use your calculator).

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10.) Let $f(x) = \sin x$.

- Find the domain of $f(x)$.
- Find the period of $f(x)$.
- Find the amplitude of $f(x)$.
- Plot $f(x)$.

11.) Let $f(x) = 2 \tan \left(x - \frac{\pi}{2} \right)$.

- Find the domain of $f(x)$.
- Find the period of $f(x)$.
- Find the amplitude of $f(x)$.
- Describe the translations of $f(x)$ then plot $f(x)$.