Sat 38 Angles Explanation

1. C

We know that 2π radians equal $360°$ which means we can set up a proportion to convert the radian measurement into degrees. Let x be the measure in degrees.

$$\frac{\frac{\pi}{4}}{x} = \frac{2\pi}{360}$$
$$2\pi x = \frac{360\pi}{4}$$
$$x = \frac{360\pi}{8\pi}$$
$$x = 45°$$

2. A

On the unit circle, the degree measurement of 225 has the coordinates of $(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$. This means that the cosine would be the value of the x-coordinate. The answer is $-\frac{\sqrt{2}}{2}$

3. C

We know that 2π radians equal $360°$ which means we can set up a proportion to convert the degrees measurement into radians. Let x be the measure in radians.

$$\frac{x}{315} = \frac{2\pi}{360}$$
$$360x = 630\pi$$
$$x = \frac{7\pi}{4}$$

4. B

We know that 2π radians equal $360°$ which means we can set up a proportion to convert the radian measurement into degrees. Let x be the measure in degrees.

$$\frac{\frac{4\pi}{6}}{x} = \frac{2\pi}{360}$$
$$\frac{1440\pi}{6} = 2\pi x$$
$$\frac{1440\pi}{12\pi} = x$$
$$120° = x$$

5. D

If we recall our unit circle, the coordinates for an angle that measures $\frac{11\pi}{6}$ radians are $\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$. This means that $\tan(\frac{11\pi}{6})$ would be:

$$\frac{\frac{-1}{2}}{\frac{\sqrt{3}}{2}} = \frac{-1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$$

6. D

Cos(90) would be equal to 0. The only other trigonometric function of the same value would be sin(π).

7. C

The coordinates of degree measure 60 on a unit circle is $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$. If tan is the y coordinate over the x coordinate, then the value of $\tan 60°$ would be:

$$\frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$$

8. A

An undefined value will, be anything that is divided by 0. In the case of tan(90), the value would be $\frac{1}{0}$.

9. B

We know that 2π radians equal $360°$ which means we can set up a proportion to convert the degrees measurement into radians. Let x be the measure in radians.

$$\frac{x}{60} = \frac{2\pi}{360}$$
$$360x = 120\pi$$
$$x = \frac{\pi}{3}$$

10. C

Using our unit circle, we know that radian measure $\frac{3\pi}{2}$ will have the coordinates of (0,-1). Since the value of sin is the same as the y-coordinate, the value of $\sin\frac{3\pi}{2}$ is -1