Read Me First: *Show all essential work neatly. Use correct notation when presenting your computations. Write using complete sentences. In particular, be very careful when using "=", equals, and "⟹", implies.   Do not "box" your answers. Communicate.*

1. (5 pts.)   If θ = 135°, what is the radian measure of θ as an exact multiple of π?? θ = 3π/4

2. (5 pts.)   If θ = 11π/6 in radian measure, what is the value of θ in degrees?? θ = 330°

3. (5 pts.)   If s = 8 meters is the length of an arc of a circle of radius r = 6 meters subtended by a central angle θ, what is the exact value of θ in degrees?? θ = (240/π)°

4. (5 pts.)   If θ = 61°35′20″, convert θ to a decimal in degrees rounded to two decimal places. θ = 61.59°

5. (5 pts.)   If θ = 28.511°, convert θ to D°M′S″ form with the answer rounded to the nearest second. θ = 28°30′40″

6. (5 pts.)   An object is traveling around a circle with a radius of 20 meters. Suppose that in 20 seconds a central angle of 2/3 radian is swept out. What is the angular speed ω of the object, and what is the linear speed ν of the object? *Here give the exact value of the item followed by its decimal approximation.* ω = (1/30) radians/sec. ≈ .033$\underline{3}$ radians/sec.
                    ν = (2/3) meters/sec.   ≈ .66$\underline{6}$ meters/sec.

7. (5 pts.)   If θ is an acute angle, and cos(θ) = 2/3, obtain the exact values for the remaining ~~four~~ trigonometric functions. tan(θ) = $5^{1/2}$/2;   cot(θ) = 2/$5^{1/2}$; sec(θ) = 3/2; csc(θ) =   3/$5^{1/2}$;   sin(θ) = $5^{1/2}$/3

8. (5 pts.)   If the point (-5, 4) is on the terminal side of an angle θ, obtain the exact value of each of the six trigonometric functions of θ. sin(θ) = 4/$(41)^{1/2}$;   cos(θ) = -5/$(41)^{1/2}$; tan(θ) =   -4/5;   cot(θ) = -5/4;   sec(θ) = -$(41)^{1/2}$/5; csc(θ) = $(41)^{1/2}$/4

9. (5 pts.)   What is the reference angle θ_r for an angle θ = -195°? θ_r = 15°

10. (5 pts.)   Suppose cos θ = -(1/5) and tan θ > 0.   What is the
exact value of each of the remaining trigonometric functions?
sec(θ) =   -5;   tan(θ) = (24)$^{1/2}$; sin(θ) = -(24)$^{1/2}$/5;
csc(θ) = -5/(24)$^{1/2}$; cot(θ) =   1/(24)$^{1/2}$;

11. (18 pts.) Fill in the following table with the information
requested concerning domain, range, and period.

Function Name	Domain (in radians)	Range	Period (in radians)
cot(θ)	B, below.	$\mathbb{R}$	π
sec(θ)	A, below.	(−∞,−1]∪[1,∞)	2π
tan(θ)	A, below.	$\mathbb{R}$	π
sin(θ)	$\mathbb{R}$	[−1,1]	2π
cos(θ)	$\mathbb{R}$	[−1,1]	2π
csc(θ)	B, below.	(−∞,−1]∪[1,∞)	2π

    A = { x ε $\mathbb{R}$: x ≠ (2k + 1)(π/2), k any integer }

    B = { x ε $\mathbb{R}$: x ≠ kπ, k any integer }

12. (2 pts.)   Use a calculator to obtain the approximate value
of each of the following expressions. Round your answer to two
decimal places. sin 10 ≈ -.54   sin 10° ≈ .17

13.,14.,15.:   Partial graphs may be found in the text.   They
generally don't show two periods that are symmetric with respect
to the origin.