Name_____   **Date**_____   **Per**_____

Show all the work. NO WORK = NO CREDIT

1) Find one negative and one positive angle coterminal with:	1a) $\frac{13\pi}{6}$, $\frac{-11\pi}{6}$
a) $\frac{\pi}{6}$ b) $-\frac{2\pi}{3}$ c) $435°$	b) $\frac{4\pi}{3}$, $-\frac{8\pi}{3}$
	c) $75°$, $-285°$
2) Find the reference angle for each of the following"	2a) $35°$
a) $215°$ b) $\frac{5\pi}{6}$ c) $-\frac{3\pi}{4}$ d) $272°$	b) $\pi/6$
	c) $\pi/4$
3) Use a calculator to find the following values to 4 decimal places:	d) $88°$
a) csc $(-51°)$ b) cot $138°$ c) sec $190°$	3a) -1.2868
	b) -1.1106
4) If $\csc\theta = -\frac{2\sqrt{3}}{3}$, and $\cos\theta < 0$, find:	c) -1.0154
a) $\sin\theta$ b) $\cos\theta$ c) $\tan\theta$	4a) $-\frac{\sqrt{3}}{2}$
	b) $-1/2$
5) If $\csc\theta = \frac{25}{24}$, find $\cot\theta$ for $0 < x < 90°$.	c) $\sqrt{3}$
	5) $7/24$
6) If $\sin\theta = -\frac{12}{13}$, and the terminal side of θ lies in Quadrant IV, find $\cos\theta$.	6) $5/13$
7) Express sin $1485°$ as a function of an angle in Quadrant I.	7) $\sin 45°$
	8) $-\csc 70°$
8) Express csc$(-430°)$ as a function of an angle in Quadrant I.	9a) $15/17$
	b) $-8/17$
9) If the terminal side of θ contains the point $(-8,15)$, find:	c) $-15/8$
a) sin θ b) cos θ c) tan θ	d) $-8/15$
d) cot θ e) sec θ f) csc θ	e) $-17/8$
	f) $17/15$

10) Solve right triangle ABC where m<A=42°, c=20, m<B=90°.
Round answers to the nearest whole number
a) m<C ≈ ?   b) b ≈ ?   c) a ≈ ?

11) Use right triangle trigonometry to express each of the following in 2 ways:

a) p =   b) q =   c) r =
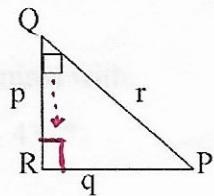
12) If $\tan x = \dfrac{1}{4}$, find $\tan 2x$.

13) If $\cos x = -\dfrac{4}{5}$, and $\sin x > 0$, evaluate $\cos\left(x + \dfrac{\pi}{6}\right)$

14) Change to radians:

a) 40°   b) 55°   c) -60.5°

15) Change to degrees:

a) $\dfrac{2\pi}{3}$ b) $-\dfrac{3\pi}{8}$ c) $\dfrac{7\pi}{3}$ d) -5π

16) Find the arc length (s) of a circle with the given radius (r) and intercepted by the given central angle (Θ). **Express answers in** Terms of Π.

a) r = 5, Θ = 60°   b) r = 2, Θ = 135°   c) r = 3, Θ = 330°

17) Find the exact values of:

a) $\csc\dfrac{5\pi}{6}$ b) $\cot\left(-\dfrac{2\pi}{3}\right)$ c) $\tan 315°$

d) $\sin\left(-\dfrac{\pi}{6}\right)$ e) $\cos(-\pi)$ f) $\sec\left(-\dfrac{3\pi}{2}\right)$

g) $\csc\dfrac{3\pi}{4}$ h) $\tan 0$ i) $\tan \pi$

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10a)	$48°$
b)	27
c)	18
11a)	$P = r\sin\theta$ or $P = \dfrac{r}{\cos\theta}$
b)	$q = r\cos\theta$ or $q = \dfrac{r}{\sec\theta}$
c)	$r = \dfrac{q}{\cos\theta}$ or $r = \dfrac{P}{\sin\theta}$
12)	$\dfrac{8}{15}$
13)	$\dfrac{-4\sqrt{3}-3}{10}$
14) a) $\dfrac{2\pi}{9}$	b) $\dfrac{11\pi}{36}$
c)	$-\dfrac{121\pi}{360}$
15a)	$120°$
b)	$-67.5°$
c)	$420°$
d)	$-900°$
16) a)	$\dfrac{5\pi}{3}$
b)	$\dfrac{3\pi}{2}$
c)	$\dfrac{11\pi}{2}$
17a)	2
b)	$\sqrt{3}/3$
c)	-1
d)	$-1/2$
e)	-1
f)	undefined
g)	$\sqrt{2}$
h)	0
i)	$\cup$