Tuesday, November 14, 2017
6:39 PM

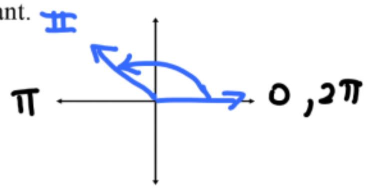
Precalculus Quarterly 1.4-1.9, 4.1
Quarter 1 Review #1

Name: KEY
Date:____________ Period:____________

Do Now:

Given $\theta = \frac{2\pi}{3}$, answer the following using the SAME unit of measure:

a) Sketch the angle in Standard Position. Identify the quadrant. II



b) Find the complement and supplement (if poss.).

Add to 90° or $\frac{\pi}{2}$ — Add to 180° or π

* must both be positive

Complement: not possible

Supplement:

$\frac{3\pi}{3} - \frac{2\pi}{3} = \boxed{\frac{\pi}{3}}$

c) Find a positive and negative coterminal angle

$\frac{2\pi}{3} + 2\pi \cdot \frac{3}{3} = \frac{2\pi}{3} + \frac{6\pi}{3} = \boxed{\frac{8\pi}{3}}$

$\frac{2\pi}{3} - 2\pi = \frac{2\pi}{3} - \frac{6\pi}{3} = \boxed{-\frac{4\pi}{3}}$

d) Convert to degree measure.

$\frac{2\pi}{3} \cdot \frac{180°}{\pi \text{ rad.}} = \boxed{120°}$

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1. Determine which of the following angles is complementary to $\theta = \frac{\pi}{6}$.

$\frac{3}{3} \cdot \frac{\pi}{2} - \frac{\pi}{6} = \frac{3\pi}{6} - \frac{\pi}{6} = \frac{2\pi}{6} = \frac{\pi}{3}$

a) $\theta = \frac{5\pi}{6}$ b) $\theta = \frac{13\pi}{6}$ c) $\theta = \frac{\pi}{3}$ d) $\theta = \frac{11\pi}{6}$ e) None of these

2. The central angle θ of a circle with radius 16 inches subtends (cuts) an arc 19.36 inches. Find θ.

a) 47.3519° b) 1.21° c) 69.3279° d) 0.8264° e) None of these

$\theta = \frac{s}{r}$ $\theta = \frac{19.36 \cancel{in}}{16 \cancel{in}} = 1.21 \text{ radians} \cdot \frac{180°}{\pi \text{ radians}} = 69.3279°$

3. Determine which of the following angles is supplementary to $\theta = \frac{\pi}{12}$.

a) $\theta = \frac{5\pi}{12}$ b) $\theta = \frac{11\pi}{12}$ c) $\theta = \frac{13\pi}{12}$ d) $\theta = \frac{25\pi}{12}$ e) None of these

$\frac{12}{12} \cdot \pi - \frac{\pi}{12} = \frac{11\pi}{12}$

4. Find the area of the sector intercepted by a central angle of 130° and with a radius of 9 in.

$130° \cdot \frac{\pi \text{ rad.}}{180°} = \frac{13\pi}{18}$ $A = \frac{1}{2} r^2 \theta = \frac{1}{2}(9 \text{in})^2 \left(\frac{13\pi}{18}\right) = 91.892 \text{ in}^2$

a) 10.210 in^2 b) 20.420 in^2 c) 91.892 in^2 d) 585 in^2 e) None of these

5. Convert $\frac{5\pi}{6}$ to degrees $\frac{5\pi}{6} \cdot \frac{180°}{\pi \text{ rad.}} = 150°$

a) 47.746° b) 68.755° c) 150° d) 216° e) None of these

$\theta = \frac{s}{r}$ $45° \cdot \frac{\pi \text{ rad}}{180°} = \frac{\pi}{4}$ $\frac{\pi}{4} = \frac{s}{5 in}$ ↗ $\frac{5\pi in}{4} = \frac{4s}{4}$ ↗ $s = 3.927 in$

6. For a circle with radius = 5 inches, what is the length of the arc intercepted by 45°?

a) 1.963 in   b) 3.927 in   c) 9.817 in   d) 225 in   e) None of these

7. Find an angle that is NOT coterminal to an angle with $\theta = -250°$.

$-250° + 360°$ + or − MULTIPLES OF 360°

✓ a) $-970°$ ✓ b) $470°$ ✓ c) $110°$ d) $-70°$ e) None of these

8. Convert to radians: -225°. $\cdot \frac{\pi \text{ rad.}}{180°} = -\frac{5\pi}{4}$

a) $\frac{5\pi}{4}$ b) -1.25 c) $3.927°$ d) $-\frac{5\pi}{4}$ e) None of these

9. Convert to $D°M'S"$: 20.876° * 2nd angle 4: DMS

a) 20°52'36"   b) 0°21'52"   c) 20°52'34"   d) 21°51'68"   e) None of these

10. Which of the following functions **DOES NOT** have an inverse?

* FAILS HORIZ. line test.

a) $f(x) = 2x - 5$ b) $f(x) = x^3 + 9$ c) $f(x) = 2|x+1|$ d) $f(x) = -2\sqrt{x+7}$ e) None of these

$h(\sqrt{x+9}) = (\sqrt{x+9})^2 - 8 = x + 9 - 8 = x + 1$

11. Find $(h \circ g)(x)$ and the **DOMAIN** of $(h \circ g)(x)$ if $g(x) = \sqrt{x+9}$ and $h(x) = x^2 - 8$;

$x + 9 \geq 0$ $x \geq -9$

~~a)~~ $x+1$; $D: (-\infty, \infty)$ ~~b)~~ $(x^2-8)\sqrt{x+9}$; $D: [2, \infty)$ ~~c)~~ $(x^2-8)\sqrt{x+9}$; $D: (-\infty, \infty)$ d) $x+1$; $D: [-9, \infty)$ e) None of these

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12. For the function $f(x) = x^2 - 3$, $x \geq 0$:

a. Graph it on the grid provided.

b. Explain how you know $f(x)$ has an inverse.

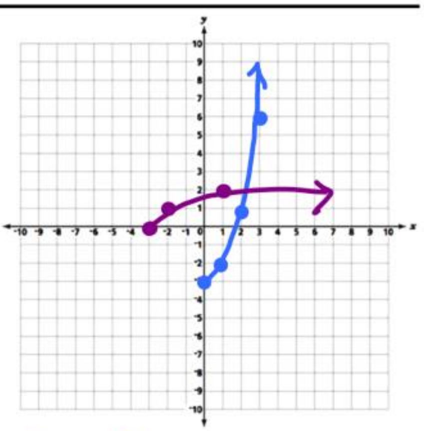
The graph passes the horiz. line test. Each input has exactly one output.

$f(x)$

x	y
0	-3
1	-2
2	1

$f^{-1}(x)$

x	y
-3	0
-2	1
1	2



c. Find the equation of the inverse function, then graph.

$y = x^2 - 3$
$x = y^2 - 3$
$x + 3 = y^2$
$y = \sqrt{x+3}$
$f^{-1}(x) = \sqrt{x+3}$

d. Identify the following:

Domain of $f(x)$ $[0, \infty)$ Range of $f(x)$ $[-3, \infty)$

Domain of $f^{-1}(x)$ $[-3, \infty)$ Range of $f^{-1}(x)$ $[0, \infty)$