Date:_____ Block:_____ Name:_____#_____

- DATE DUE:_____
- Complete all questions NEATLY in the space provided.
- When working within the question, keep a minimum of 4 places after the decimal.
- Round final Answers to the nearest TENTH.
- Simplify all final answers

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1. For each of the angles below, find one POSITIVE and one NEGATIVE co terminal angle:
   (Answers must be EXACT)   **[2 pts]**

   A) $765°$ B) $\dfrac{55\pi}{8}$

   Positive:_____   Positive:_____

   Negative:_____   Negative:_____

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2. Find the exact numerical value of each expression (ie. no decimal answers). If the answer involves radicals, then leave your answer in the simplest radical form. Show all work!!!

   $\dfrac{5\cos(-240°)}{4\sin 210° - 3\tan(60°)}$ **[4 pts]**

   B) $\dfrac{3\tan\left(-\dfrac{2\pi}{3}\right) + 4\sec\left(\dfrac{\pi}{4}\right)}{6\cot\left(\dfrac{7\pi}{3}\right)}$ **[4 pts]**

3. Given $\sin\theta = -\dfrac{4}{7}$ where $\pi \le \theta < \dfrac{3\pi}{2}$, Find the EXACT value of $\sec\theta$ and $\cot\theta$. Draw a sketch (label

it) showing angle θ in standard position. **[4 pts]**

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4. Determine the approximate measure of each angle. Use diagrams to show the number of possible solutions and the quadrants in which they lie. Then, give answers to the nearest hundredth of a unit, where possible.
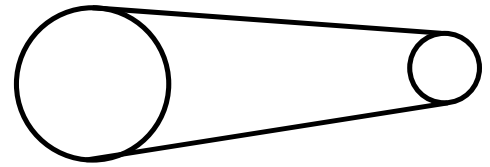
A) $\sin\theta = 0.42$, domain $-\pi \le \theta \le \pi$ **[2 pts]**

B) $\cot\theta = -4.87$, domain $-\dfrac{\pi}{2} \le \theta \le \pi$ **[2 pts]**

C) $\sec\theta = 4.87$, domain $-360° \le \theta < 180°$ **[2 pts]**

D) $\tan\theta = 1.5$, domain $-180° \le \theta < 360°$ **[2 pts]**

5. Two wheels are connected by a pulley as shown. The large wheel has a radius of 15cm and the small wheel has a radius of 5cm.

A) If the large wheel rotates $40°$, how many radians does the small wheel rotate? [**2 pt**[

B) If the small wheel rotates $\frac{5\pi}{12}$ radians, how many degrees does the large wheel rotate? [**2 pt**]

C) If the large wheel rotates $100°$, what distance does a point on the circumference of the small wheel travel? [**2 pt**]
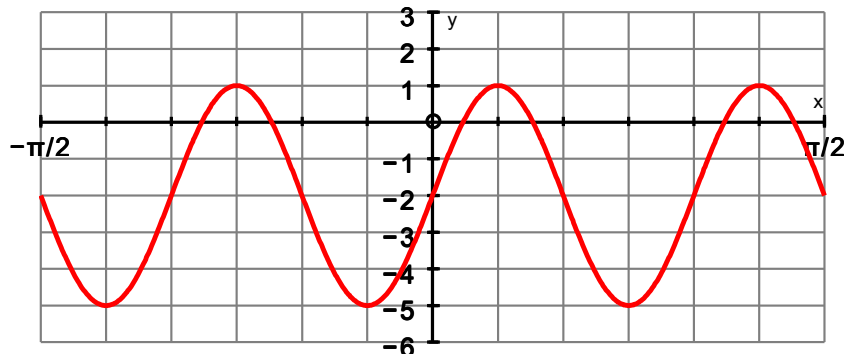
6. The point $\left(\frac{5}{6}, y\right)$ lies on the unit circle in quadrant IV. Find the missing coordinate point. [**2 pt**]

7. For the following sinusoidal graph, state the period, the equation of the sinusoidal axis, and the amplitude and give the indicated equations. [**5 pts**]

Period:_____

E.o.S.A.: _____

Amplitude: _____
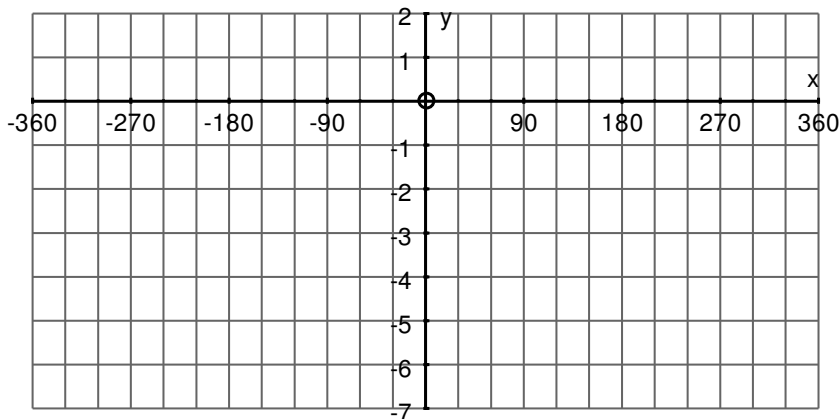
Reflected Sine
$y = -\sin\theta$

Regular Cosine
$y = \cos\theta$

8. For each sinusoidal function, neatly graph **two complete cycles**
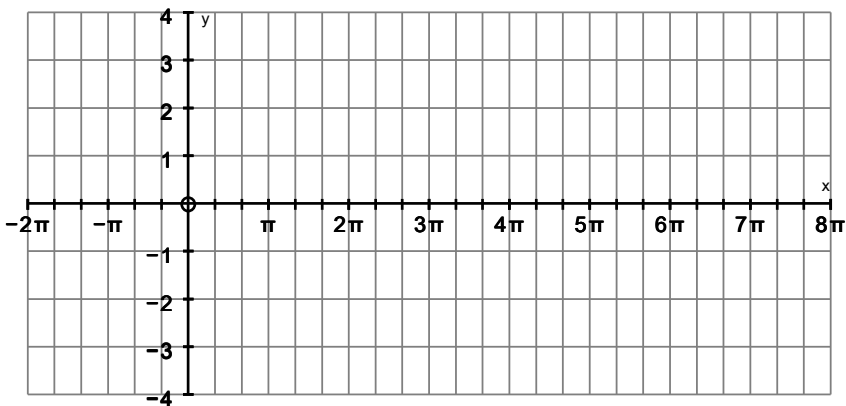
$$-\frac{1}{2}(y+3) = \cos(3x-180)$$ **[5 pts]**

9. For each sinusoidal function, neatly graph **two complete cycles**

$$y = \sin\frac{1}{2}\left(x+\frac{\pi}{3}\right) - 2$$ **[5 pts]**

10. If $P(\theta) = \left(-\frac{\sqrt{5}}{3}, \frac{2}{3}\right)$,   **[6 pts]**

A) Show that it is a point on the unit circle,

B) State the quadrant that θ terminates in.

C) Determine the coordinates of:

i) $P(\theta + \pi)$ ii) $P(\theta - \pi)$

iii) $P\left(\theta + \frac{\pi}{2}\right)$ iv) $P\left(\theta - \frac{\pi}{2}\right)$