MATH 119: Quiz 2

Name: key

Directions:

- Show your thought process (commonly said as "show your work") when solving each problem for full credit.
- If you do not know how to solve a problem, try your best and/or explain in English what you would do.
- Good luck!

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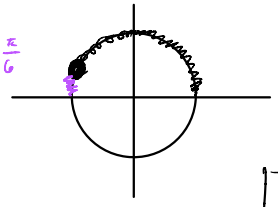
1. Suppose $t = \dfrac{17\pi}{6}$

   (a) Find the terminal point associated with t.



① $\bar{t} = \frac{\pi}{6}$

② $Q\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

③ $P\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$$t = \frac{17\pi}{6} = \frac{12\pi + 5\pi}{6} = 2\pi + \frac{5\pi}{6} = 2\pi + \frac{\pi}{2} + \frac{\pi}{3}$$

ignore!

   (b) Find $\sin(t), \cos(t)$ and $\tan(t)$.

$t = \frac{17\pi}{6}$ has terminal point $P\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

so $\sin\left(\frac{17\pi}{6}\right) = \boxed{\frac{1}{2}}$

$\cos\left(\frac{17\pi}{6}\right) = \boxed{-\frac{\sqrt{3}}{2}}$

$\tan\left(\frac{17\pi}{6}\right) = \frac{1/2}{-\sqrt{3}/2} = -\frac{1}{2} \cdot \frac{2}{\sqrt{3}} = -\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{-\frac{\sqrt{3}}{3}}$

2. I want to transform $f(x) = \sin(x)$ into $g(x)$ by applying the following transformations:

   (a) Reflection around x-and y-axes

   (b) Vertical shift of 3 units up

   (c) Horizontal shift four units right

   (d) Vertical stretch by a factor of 2

   (e) Horizontal stretch by a factor of 5

   Based on $f(x)$, what should the formula of $g(x)$ be?

(b) (a) (d) (a) (e) (c)

$$g(x) = 3 - 2\sin\left(-\frac{1}{5}(x-4)\right)$$

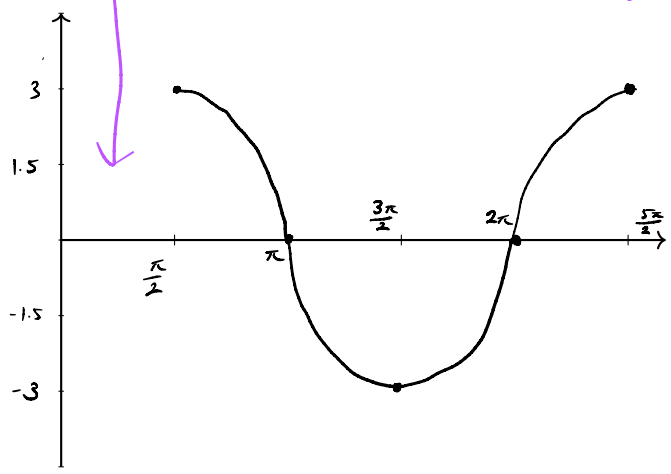
3. Graph one period of

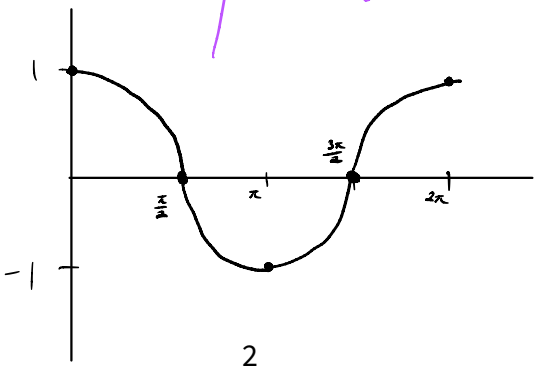
$$f(x) = 3\cos\left(x - \frac{\pi}{2}\right)$$

horizontal shift right $\frac{\pi}{2}$ units

vertical stretch by a factor of 3

must have this gap.



Choose your tick marks!

change y-ticks to -3 and 3 + add $\frac{\pi}{2}$ to each x-coordinate.