Team: **Seat #:** **Name:** **PreCalculus Team Quiz 1-I**

Show all work. When there is no work to show, explain your reasoning in complete sentences.

1. Given $g(x) = 3x^5 + 32$, find $g^{-1}(x)$.

$$\sqrt[5]{\frac{x-32}{3}}$$

2. State the domain of $y = \sqrt{10 - 2x}$.

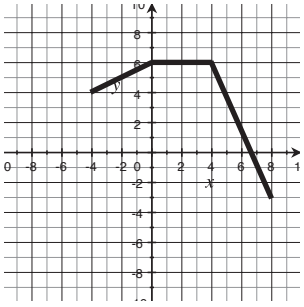
$x \leq 5$

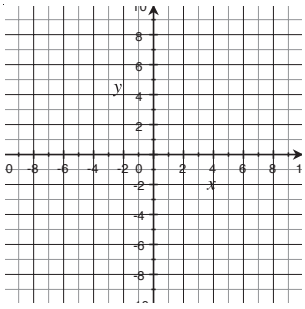
3. If $h(2) = 8$, find $h^{-1}(2)$ and $h^{-1}(8)$ if possible.

$h^{-1}(8) = 2$
$h^{-1}(2)$ is unknown

4. State the domain and range of $f(x)$ shown below. Then state the domain and range of $f^{-1}(x)$ and sketch $f^{-1}(x)$. Mark four points on the graph of $f^{-1}(x)$, and label their coordinates.

domain of f: $-4 < x < 8$
range of f: $-3 < y < 6$
domain of f^{-1}: $-3 < x < 6$
range of f^{-1}: $-4 < y < 8$





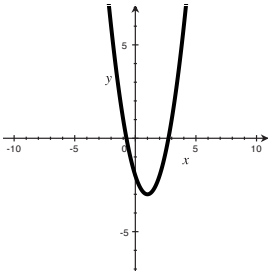
5. Given $p(x) = 2x^2 + 3x - 10$ and $m(x) = x - 4$, find $m(p(-8))$ and $p(m(x))$.

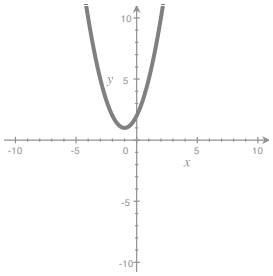
$m(p(-8)) = 90$
$p(m(x)) = 2x^2 - 13x + 10$

Team: **Seat #:** **Name:** **PreCalculus Team Quiz 1-II**

Show all work. When there is no work to show, explain your reasoning in complete sentences.

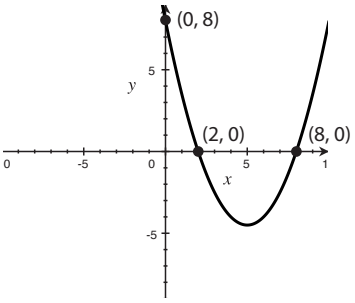
1. Given f shown below, graph $f(x + 2) + 4$.





2. What is the equation of the parabola shown below?

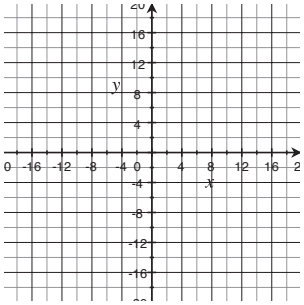
$y = \frac{1}{2}x^2 - 5x + 8$



3. Stretch $f(x) = 8x^2 - 6x$ horizontally by a factor of 2, and then translate it up by 7.

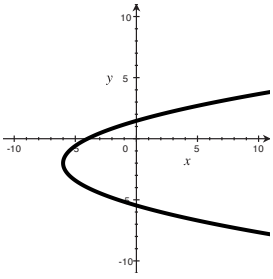
$f(x/2) + 7 = 2x^2 - 3x + 7$

4. Find the vertex and intercepts of $y = 4x^2 - 12x - 7$. Then plot them and sketch the parabola.



(1.5, -16)
(-0.5, 0)
(3.5, 0)
(0, -7)

5. Identify whether or not the relation shown below is a function, and whether or not its inverse is a function.



The relation is not a function.
The inverse of the relation is a function.

Team: **Seat #:** **Name:** **PreCalculus Team Quiz 2-I**

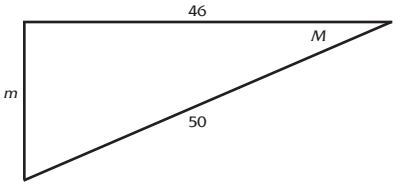
Show all work. When there is no work to show, explain your reasoning in complete sentences.

1. Evaluate $\sec \frac{5\pi}{12}$. **3.86**

2. Is $\frac{5\pi}{6}$ coterminal with $\frac{11\pi}{6}$? **no**

3. Convert 750° to radians without a calculator. $\frac{25\pi}{6}$

4. Without using the Pythagorean theorem, find m, M, and $\csc M$ in the right triangle below.



$m \approx 19.6$
$M \approx 23.1°$
$\csc M \approx 2.55$

5. Sketch an angle in standard position that passes through the point (1, 2), and find the cosecant of the angle. $\frac{\sqrt{5}}{2}$

Team: **Seat #:** **Name:** **PreCalculus Team Quiz 2-II**

Show all work. When there is no work to show, explain your reasoning in complete sentences.

1. Label the points for the following angles on a unit circle: 0°, 30°, 45°, 60°, 90°, 180°, and 270°. Then cover your answer and redo this problem from memory. Check your answers, and make corrections in a different color.

2. Find sin 930° without a calculator by sketching it in standard position, finding its reference angle, and sketching a right triangle with one leg on the x-axis. $-1/2$

3. Verify $\frac{\tan 2x}{\sec 2x} = 2 \sin x \cos x$.

4. Verify $\csc x \sec x - \cot x = \tan x$.

5. Verify $\cot x + \cot^3 x = \cot x \csc^2 x$.

Team: **Seat #:** **Name:** **PreCalculus Team Quiz 3-I**

Show all work. When there is no work to show, explain your reasoning in complete sentences.

1. Find the general solution to $3 \tan x = 2 \sec x$.

$x \approx 42^\circ + 360^\circ n$
$x \approx 138^\circ + 360^\circ n$

2. Sketch a diagram to illustrate why $\cos \theta = \cos (360^\circ - \theta)$.

3. Find all solutions to $\tan^2 x + 5 \tan x = 24$ in the range $0^\circ \le x < 360^\circ$.

$x \approx 72^\circ$
$x \approx 97^\circ$
$x \approx 252^\circ$
$x \approx 277^\circ$

4. Without using a calculator, find all solutions to $\sin x - \sin^3 x = 0$ in the range $0 \le x < 3\pi$.

$x = 0$
$x = \pi/2$
$x = \pi$
$x = 3\pi/2$
$x = 2\pi$
$x = 5\pi/2$

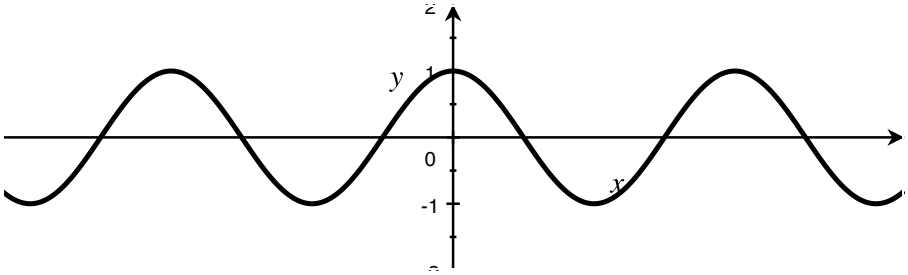
5. Find the general solution to $8 \sin 3x = 5$, and state how many solutions are in the range $0^\circ \le x < 720^\circ$.

$x = 13^\circ + 120n^\circ$
$x = 47^\circ + 120n^\circ$
12

Team: **Seat #:** **Name:** **PreCalculus Team Quiz 3-II**

Show all work. When there is no work to show, explain your reasoning in complete sentences.

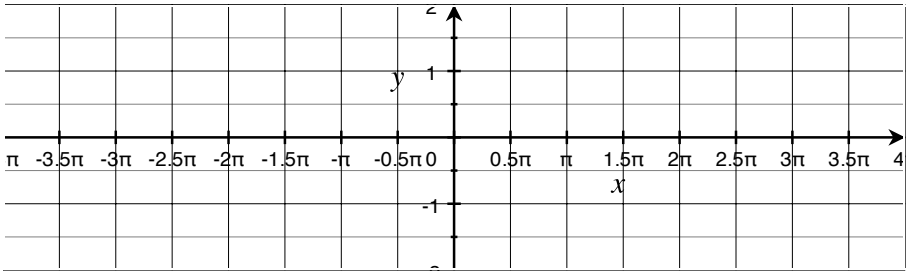
1. Given the graph below is $y = \cos bx$, sketch $y = \cos 2bx$.



2. Sketch and label $s(x) = \sin x$ and $c(x) = \cos x$, and state the period and range of each.

2π

$-1 \le x \le 1$



3. State the amplitude, period, horizontal shift, and vertical shift of $y = 1 - 2 \sin (4x + \pi/3)$.

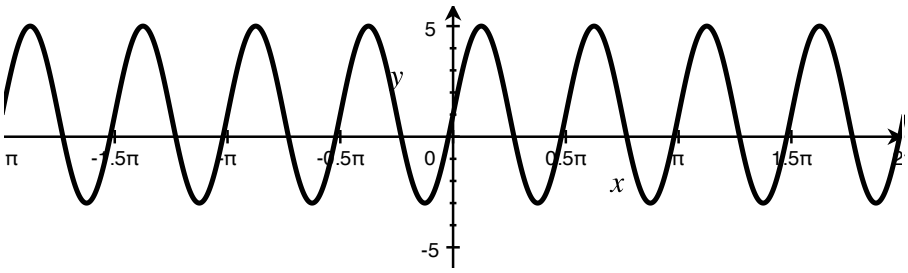
2

$\pi/2$

$-\pi/12$

1

4. State the amplitude, period, horizontal shift, vertical shift, and equation of the sine curve below.



4

$\pi/2$

0

1

$y = 1 + 4 \sin 4x$

5. Use a graphing calculator to sketch $y = 1 + 2 \sin x$ and $y = 3 \cos 2x$ over the domain $570° \le x \le 720°$ and find all points of intersection in this domain. Round to the nearest .001° (unlike the answers shown).

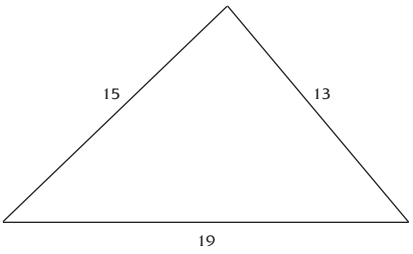
$x \approx 590°$

$x \approx 670°$

Team: **Seat #:** **Name:** **PreCalculus Team Quiz 4**

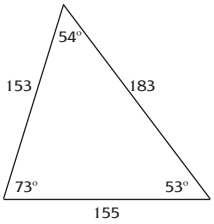
Show all work.

1. Find the area of the triangle below.



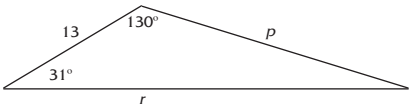
97

2. Find the altitudes of the triangle below.



124
146
148

3. Solve for the unknown sides in the triangle below.



$p \approx 20.6$
$r \approx 30.6$

4. Solve triangle *BHP* given $b = 22$, $h = 30$, and $P = 111°$.

$p \approx 43.1$
$B \approx 28.5°$
$H \approx 40.5°$

5. How many triangles exist given $d = 28$, $D = 23°$, and $f = 25$?

one