

**NOTE:** Your assignment must be completely done for credit

Name: Key period: \_\_\_\_\_

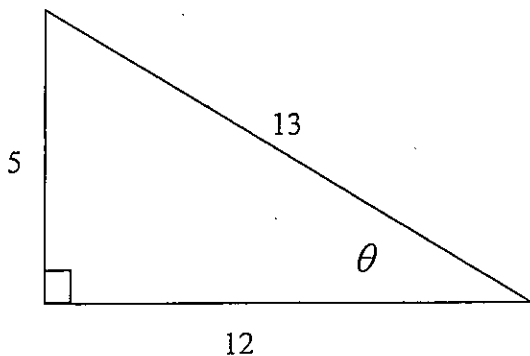
Algebra 2 for Credit Review

A day (Jan 10)

B day (Jan 11)

No Calculators are allowed on the 2<sup>nd</sup> Quarter Final Exam

1. Write all 6 trigonometric ratios given the following triangle:



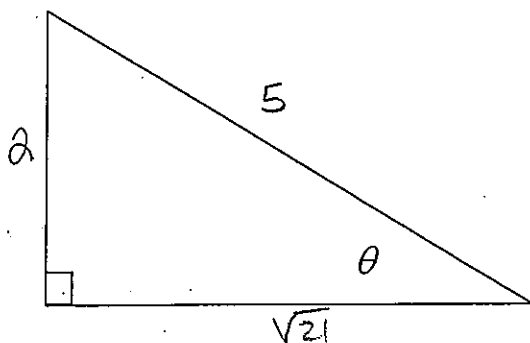
$$\sin \theta = \frac{5}{13} \quad \csc \theta = \frac{13}{5}$$

$$\cos \theta = \frac{12}{13} \quad \sec \theta = \frac{13}{12}$$

$$\tan \theta = \frac{5}{12} \quad \cot \theta = \frac{12}{5}$$

2. In a right triangle,  $\csc \theta = \frac{5}{2}$ .

Find the remaining five trigonometric ratios.



$$\sin \theta = \frac{2}{5} \quad \csc \theta = \frac{5}{2}$$

$$\cos \theta = \frac{\sqrt{21}}{5} \quad \sec \theta = \frac{5}{\sqrt{21}}$$

$$\tan \theta = \frac{2}{\sqrt{21}} \quad \cot \theta = \frac{\sqrt{21}}{2}$$

$$2^2 + x^2 = 5^2$$

$$x^2 = 25 - 4$$

$$x = \sqrt{21}$$

3. Find the following trigonometric ratios for the given angles. Do not use a calculator!

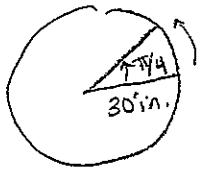
a)  $\cos(270^\circ) = \frac{0}{1} = 0$

b)  $\tan\left(\frac{7\pi}{6}\right) = -\frac{1}{\sqrt{3}}$

c)  $\sin(-45^\circ) = \frac{-1}{\sqrt{2}} = -\frac{\sqrt{2}}{2}$



4. The *radius* of a giant peach measures 30 inches. If it is cut into pieces with angles of  $\frac{\pi}{4}$  radians, how far would a worm have to crawl along the outside of a piece?  
Round your answer to two decimal places.

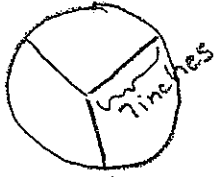


$$S = r\theta$$

$$S = (30)\left(\frac{\pi}{4}\right)$$

$$S = \frac{15}{2}\pi \text{ inches} \approx 23.56 \text{ in.}^2$$

5. The *diameter* of a Frisbee is 14 inches. The Frisbee company that is selling it divided the surface of each Frisbee into three equal pieces, making each piece a different color. What is the area of one of those pieces? Round your answer to two decimal places.



$$\theta = \frac{2\pi}{3}$$

$$d = 14$$

$$r = 7$$

7. Identify the following given the graph of the function

$$g(x) =$$

$$g(3) = 0$$

$$\text{x-intercept(s): } (1, 0) \quad (3, 0)$$

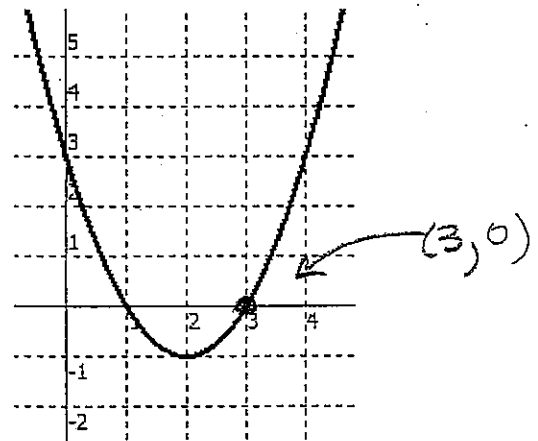
$$\text{y-intercept: } (3, 0)$$

Write the equation of the function:

$$g(x) = (x-2)^2 - 1$$

Identify the domain:  $\mathbb{R}$

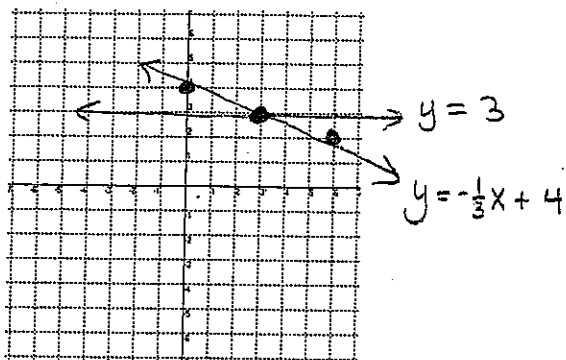
Identify the range:  $y \geq -1$



8. Solve by graphing.

$$\text{a) } \begin{cases} y = -\frac{1}{3}x + 4 \\ y = 3 \end{cases}$$

solution:  $(3, 3)$



9. Solve using the *substitution method*.

$$\text{a) } \begin{cases} y = 2x - 3 \\ 4y + 3 = 5x \end{cases}$$

$$\begin{aligned} 4(2x - 3) + 3 &= 5x & y &= 2(3) - 3 \\ 8x - 12 + 3 &= 5x & y &= 3 \\ 8x - 9 &= 5x & & \\ -9 &= -3x & & \\ 3 &= x & & \end{aligned}$$

solution:  $(3, 3)$

10. Solve using the *elimination method* (in other words ... linear combination method).

$$\text{a) } \begin{cases} 5x + 7y = 11 \\ -5x + 3y = 19 \end{cases}$$

$$10y = 30$$

$$y = 3$$

$$5x + 7(3) = 11$$

$$5x + 21 = 11$$

$$5x = -10$$

$$x = -2$$

solution:  $(-2, 3)$

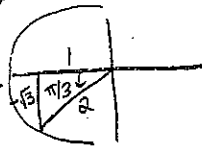
11. Given  $\frac{\pi}{2} \leq \theta \leq \frac{3\pi}{2}$  and  $\sin \theta = -\frac{\sqrt{3}}{2}$ , then  $\theta = ?$

~~A.  $\frac{\pi}{3}$~~

C.  $\frac{4\pi}{3}$

B.  $\frac{7\pi}{6}$

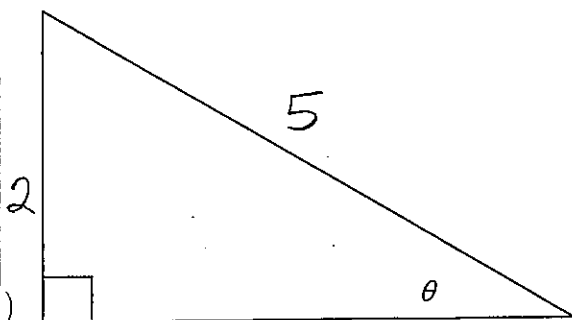
~~D.  $\frac{2\pi}{3}$~~



13. If  $\sin \theta = \frac{2}{5}$

Find  $\tan \theta = \frac{2}{\sqrt{21}} = \frac{2\sqrt{21}}{21}$

Use the triangle to help you!!



$$2^2 + x^2 = 5^2$$

$$x^2 = 25 - 4$$

$$\sqrt{x^2} = \sqrt{21}$$

$x = \sqrt{21}$

15. How many radians is in  $100^\circ$ ?

$$100^\circ \left( \frac{\pi}{180^\circ} \right) = \frac{10\pi}{18} = \frac{5\pi}{9}$$

17. If  $f(x) = 3x + 8$ , and  $h(x) = x^2 + 2$ , find:

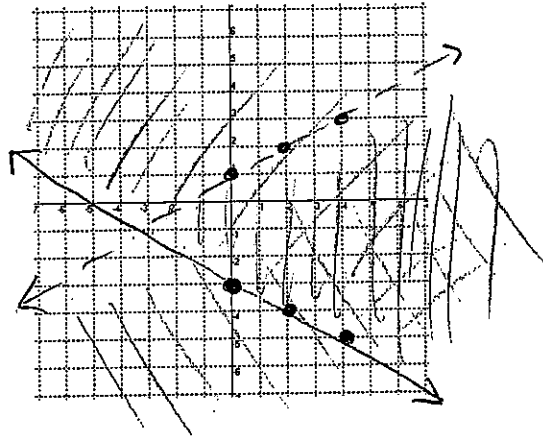
$$\begin{aligned} \text{a) } f(-2) &= 3(-2) + 8 \\ &= -6 + 8 \\ &= \boxed{2} \end{aligned}$$

$$\text{b) } f(h(x)) =$$

$$\begin{aligned} \text{c) } f(h(-3)) &= \\ &= 3((-3)^2 + 2) + 8 \\ &= 3(9 + 2) + 8 \\ &= 3(11) + 8 \\ &= 33 + 8 \\ &= \boxed{41} \end{aligned}$$

18. Graph the system of inequalities to determine the solution area.

$$\begin{aligned} \text{b) } &\begin{cases} x + 2y \geq -6 \\ -x + 2y < 2 \end{cases} \\ &\rightarrow \begin{cases} y \geq -\frac{1}{2}x - 3 \\ y < \frac{1}{2}x + 1 \end{cases} \end{aligned}$$



19. Simplify  $\sqrt{60}$  fully, so that there are no decimals.

$$\begin{aligned} &= \sqrt{6 \cdot 10} \\ &= \sqrt{3 \cdot 2 \cdot 2 \cdot 5} \\ &= \boxed{2\sqrt{15}} \end{aligned}$$

$\begin{aligned} \text{Example: } &\sqrt{12} \\ &= \sqrt{(2 \cdot 2) \cdot 3} \\ &= 2\sqrt{3} \end{aligned}$
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20. Simplify fully using the ideas in the previous question: