Honors Math 2
Review for Final #5

Name Key
Period_____ Date_____

Solve the systems algebraically.

1. $y = x^2 + 18x + 35$
$y = -x^2 + 2x + 5$

$x^2 + 18x + 35 = -x^2 + 2x + 5$

$2x^2 + 16x + 30 = 0$

$2(x^2 + 8x + 15) = 0$

$2(x+5)(x+3) = 0$

$x = -5 \quad x = -3$

$(-5, -30)$

$(-3, -10)$

2. $y = x^2 + 16x + 32$
$y = -x^2 + 2$

$x^2 + 16x + 32 = -x^2 + 2$

$2x^2 + 16x + 30 = 0$

$2(x^2 + 8x + 15) = 0$

$2(x+5)(x+3) = 0$

$x = -5 \quad x = -3$

$(-5, -23)$

$(-3, -7)$

3. $y = x^2 + 16x + 32$
$y = -x^2 + 2$

Same as #2

4. $y = x^2 + 3x - 7$
$x + y = -2$ $\quad y = -x - 2$

$-x - 2 = x^2 + 3x - 7$

$0 = x^2 + 4x - 5$

$0 = (x+5)(x-1)$

$x = -5 \quad x = 1$

$(-5, 3)$

$(1, -3)$

Solve the following quadratic functions.

5. $-4x^2 - 7x = -3$

$4x^2 + 7x - 3 = 0$

$(\quad)(\quad) = 0$

$x = \dfrac{-7 \pm \sqrt{49 - 4(4)(-3)}}{2(4)}$

$x = \dfrac{-7 \pm \sqrt{97}}{8}$

6. $x^2 + 10x + 18 = 0$

$x = \dfrac{-10 \pm \sqrt{100 - 4(1)(18)}}{2(1)}$

$x = \dfrac{-10 \pm \sqrt{28}}{2}$

$x = \dfrac{-10 \pm 2\sqrt{7}}{2}$

$x = -5 \pm \sqrt{7}$

Use the discriminant to determine the number of real solutions.

7. $x^2 + 3x + 5 = 0$

$b^2 - 4ac$ discriminant

$9 - 4(1)(5) =$

-11

2 imaginary solution

8. $2x^2 + 2 = -4x$

$2x^2 + 4x + 2 = 0$

$b^2 - 4ac$

$16 - 4(2)(2)$

$16 - 16 = 0$

1 real solution

Factor the polynomial completely.

9. $x^3 - 6x^2 - 72x$ $x(x^2 - 6x - 72)$ $x(x-12)(x+6)$	10. $3y^5 - 48y^3$ $3y^3(y^2 - 16)$ $3y^3(y+4)(y-4)$
11. $x^3 + 8$ $(x+2)(x^2 - 2x + 4)$	12. $x^3 + x^2 + x + 1$ $x^2(x+1) + 1(x+1)$ $(x+1)(x^2+1)$
13. $4x^3 + 8x^2 - 9x - 18$ $4x^2(x+2) - 9(x+2)$ $(x+2)(4x^2 - 9)$ $(x+2)(2x-3)(2x+3)$	14. $y^3 - 64$ $(y-4)(y^2 + 4y + 16)$
15. $x^4 - 25$ $(x^2+5)(x^2-5)$ $(x^2+5)(x+\sqrt{5})(x-\sqrt{5})$	16. $3x^4 - x^2 - 24$ $(3x^2 + 8)(x^2 - 3)$ $(3x^2+8)(x+\sqrt{3})(x-\sqrt{3})$

Write a polynomial function of least degree that has rational coefficients, a leading coefficient of 1 and the given zeros.

17. $x = 3, x = 2$ $(x-3)(x-2)$ $f(x) = x^2 - 5x + 6$	18. $x = \frac{1}{2}, x = -2$ $(x - 1/2)(x+2)$ $f(x) = x^2 + 2x - 1/2x - 1$ $f(x) = x^2 + 3/2x - 1$
19. $x = \sqrt{5}, x = -\sqrt{5}$ $(x-\sqrt{5})(x+\sqrt{5})$ $f(x) = x^2 - 5$	20. $x = 3i, x = -3i$ $(x-3i)(x+3i)$ $x^2 - 9i^2$ $x^2 - 9(-1)$ $f(x) = x^2 + 9$
21. $x = 2 + i, x = 2 - i$ $(x-2-i)(x-2+i)$ $x^2 - 2x + xi$ $-2x \quad +4 - 2i$ $-xi \quad +2i \quad -i^2$ $f(x) = x^2 - 4x + 5$	22. $x = \sqrt{7}, x = -\sqrt{7}$ $(x-\sqrt{7})(x+\sqrt{7})$ $x^2 - 7$ $f(x) = x^2 - 7$

Algebra 2
BLOCK 6 ASSESSMENT Student Copy
2009-10

1. Find the domain and range of:

$y = 2\cos x$

Domain: $\mathbb{R}$
Range: $[-2, 2]$
$-2 \le y \le 2$

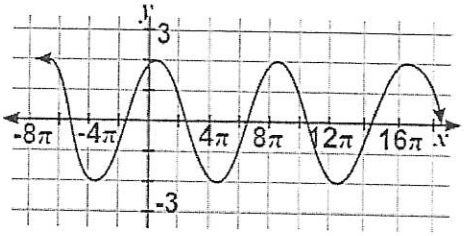
A) D: all real numbers
R: $2 \le y \le 6$

B) D: all real numbers
R: $-2\pi \le x \le 2\pi$,

C) D: $x \ge \frac{\pi}{3}$
R: $-3 \le y \le 3$

D) D: all real numbers
R: $-2 \le y \le 2$

2. Find the domain and range of the sin function graphed below:



A) D: $x \ge \frac{\pi}{6}$
R: $-2 \le y \le 2$

Domain: $\mathbb{R}$
Range: $[-2, 2]$
$-2 \le y \le 2$

B) D: all real numbers
R: $-2 \le y \le 2$

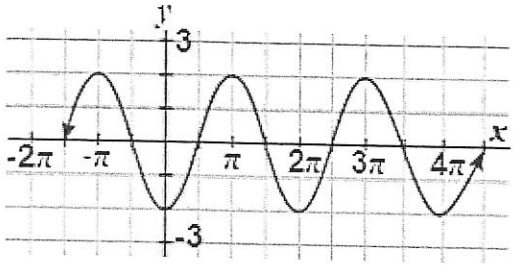
C) D: $x \le \frac{\pi}{2}$
R: $-3 \le y \le 3$

D) D: all real numbers
R: $-1 \le y \le 3$

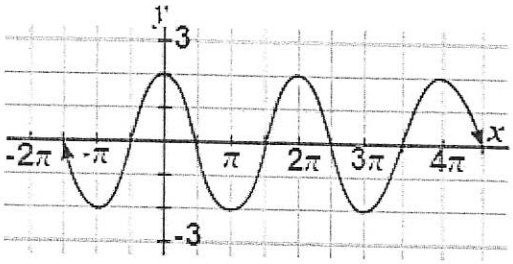
3. Determine which of these answers is the correct graph of the function shown here.

$f(x) = -2\sin\theta$

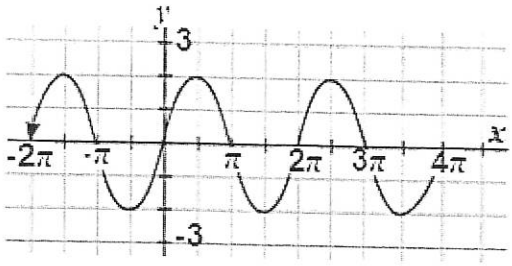
A)
$-2\cos\theta$



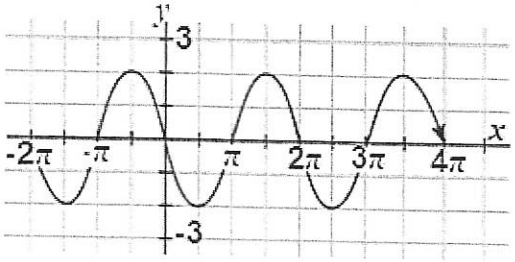
B)
$2\cos\theta$



C)
$2\sin\theta$



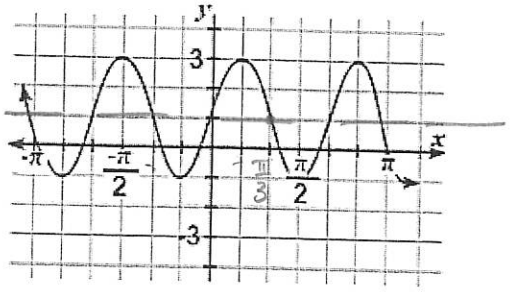
D)



4. Determine which of these answers is the correct equation for the graph shown here.

midline

Amp: 2



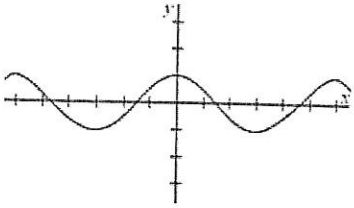
A) $f(x) = 1 - 2\sin(3x + \pi)$ left $\pi/3$

B) $f(x) = 1 + 2\sin 3(x - \pi)$ right π

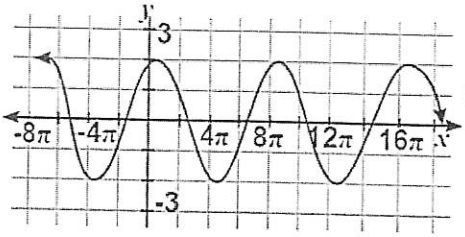
C) $f(x) = 1 - 2\cos 3(x + \pi)$ left π

D) $f(x) = 1 + 2\cos(3x - \pi)$ right $\pi/3$

5.



Based on the parent function $f(x) = \cos x$ above, determine which of these answers is the correct equation for the graph shown here.



amp 2

A) $f(x) = 2\cos\frac{1}{4}(x - \pi)$ $P = \frac{2\pi}{1/4} = 8\pi$

~~B)~~ $f(x) = 4\sin\frac{1}{2}(x + \pi)$ $P = \frac{2\pi}{1/2} = 4\pi$

C) $f(x) = 2\sin\left(\frac{x}{4} - \pi\right)$ $P = 2\pi$

~~D)~~ $f(x) = 4\cos 2(x + \pi)$ $P = \pi$

6. Change this fraction to its degree measure.

$$\frac{5\pi}{2}\left(\frac{180°}{\pi}\right) = 450°$$

A) 550°

B) 500°

C) 450°

D) 300°

7. Change −220° to its radian measure.

A) $\frac{-11\pi}{9}$

$$-220°\left(\frac{\pi}{180°}\right) = \frac{-11\pi}{9}$$

B) $\frac{9\pi}{11}$

C) $\frac{-9\pi}{11}$

D) $\frac{11\pi}{9}$

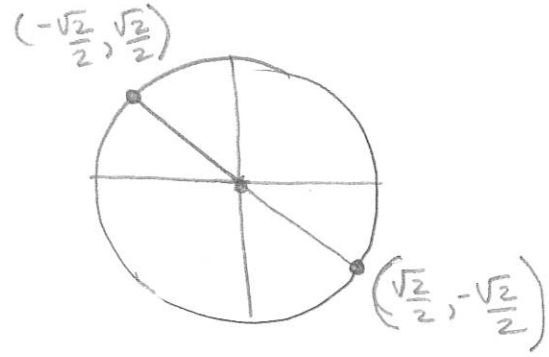
8. If $\tan\theta = -1$, for $\pi \le \theta \le 2\pi$, find the exact value for θ. Use unit circle

A) $\frac{7\pi}{4}$

B) $\frac{4\pi}{3}$

C) $\frac{5\pi}{4}$

D) $\frac{5\pi}{3}$



unit circle

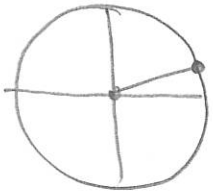
9. If $\sin\theta = \frac{1}{2}$, for $0 \le \theta \le \frac{\pi}{2}$, then $\theta = ?$

A) $\frac{\pi}{3}$

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

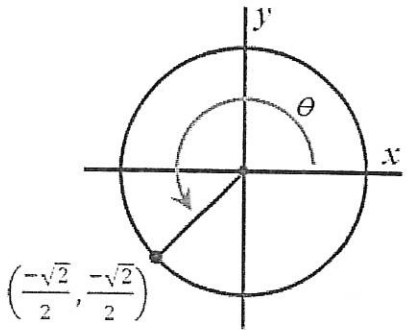
C) $\frac{\pi}{6}$

D) $\frac{5\pi}{3}$



$(\sqrt{3}/2, 1/2)$

10. Find $\tan\theta$, given the point on the unit circle pictured.



A) $\frac{-\sqrt{3}}{2}$

B) 0

C) 1

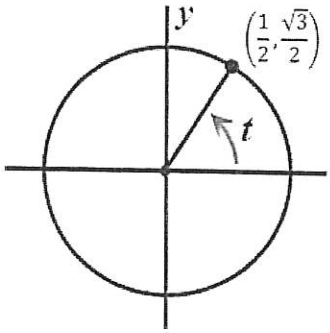
D) −1

$\tan\theta = \frac{y}{x} = \frac{opp}{adj} = \frac{\sin\theta}{\cos\theta}$

11. Find $\cos t$, given the point on the unit circle pictured.

$(\cos\theta, \sin\theta)$

(x, y)



A) $\frac{1}{2}$

B) $\frac{-1}{2}$

C) $\frac{-\sqrt{3}}{2}$

D) $\frac{-\sqrt{2}}{2}$

12. Find the value of the function shown here:

$$\sin\left(\frac{-2}{3}\pi\right)$$

go to this angle on unit circle

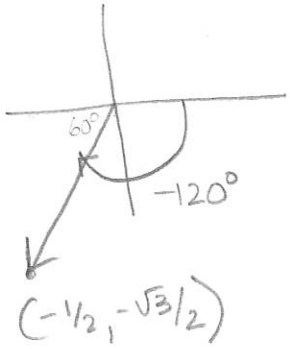
★ rotate clockwise

A) $\frac{-1}{2}$

B) $\frac{-\sqrt{2}}{2}$

C) $\frac{-\sqrt{5}}{2}$

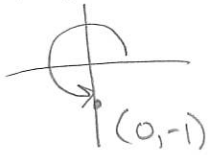
D) $\frac{-\sqrt{3}}{2}$



unit circle

13. Find the value of $\tan\left(\frac{3\pi}{2}\right)$. 270°

A) 0
B) $\sqrt{3}$
C) Undefined
D) -1



unit circle

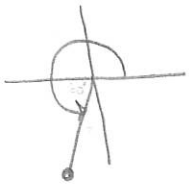
14. Find the value of $\cos\left(\frac{4\pi}{3}\right)$. 240°

A) $\frac{\sqrt{2}}{2}$

B) $-\frac{1}{2}$

C) $\frac{1}{2}$

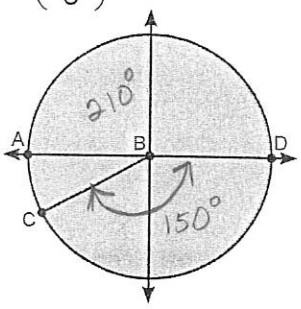
D) $-\frac{\sqrt{3}}{2}$



$(-1/2, -\sqrt{3}/2)$

15. Find the length of $\overset{\frown}{DAC}$ given $\overline{BC} = 3$, and $\angle DBC = -\left(\frac{5\pi}{6}\right)$.

$210° = \frac{7\pi}{6}$



A) $\frac{5\pi}{2}$

B) $\frac{21\pi}{2}$

C) $\frac{7\pi}{2}$

D) $\frac{15\pi}{2}$

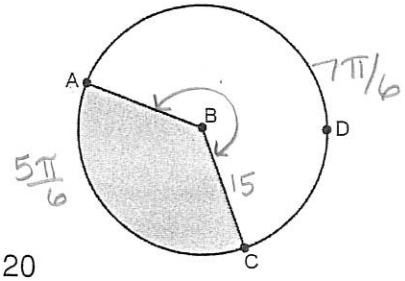
arc length $s = r\theta$

$s = 3\left(7\pi/6\right)$

$s = \frac{21\pi}{6}$

$s = \frac{7\pi}{2}$

16. Given the ~~length~~ measure of $\overset{\frown}{ADC} = \frac{7\pi}{6}$, $r = 15$, find the area of the shaded sector in $\odot B$ using radian measure.



A) 20

B) $\frac{\pi}{18}$

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

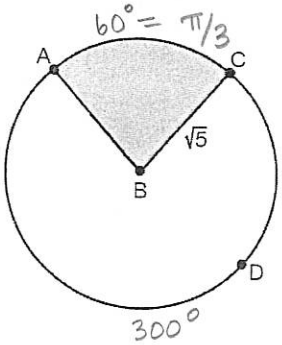
D) $\frac{375\pi}{4}$

$A = \frac{1}{2} r^2 \theta$

$A = \frac{1}{2}(15)^2\left(\frac{5\pi}{6}\right)$

$A = \frac{375\pi}{4}$

17. Given $m\overset{\frown}{ADC} = \frac{5\pi}{3}$, $r = \sqrt{5}$, find the area of the shaded sector in $\odot B$ using radian measure.



A) $\frac{5\pi}{6}$

B) $\frac{11\pi}{6}$

C) $\frac{13\pi}{6}$

D) $\frac{\pi}{6}$

$A = \frac{1}{2} r^2 \theta$

$A = \frac{1}{2}(\sqrt{5})^2(\pi/3)$

$A = \frac{5\pi}{6}$