Unit 5 Day 13

Test Review Day

Warm-up!

1. Graph one period in the positive and negative direction for y = -2cos(3x) – 1.

2. Solve the triangle given b = 16, a = 10, and angle A = 30. Round angles to the nearest degree and sides to the tenths place

3. The pilot of an airplane finds the angle of depression to an airport to be 16 degrees. If the altitude of the plane is 6000 meters, find the horizontal distance to the airport to the nearest meter.

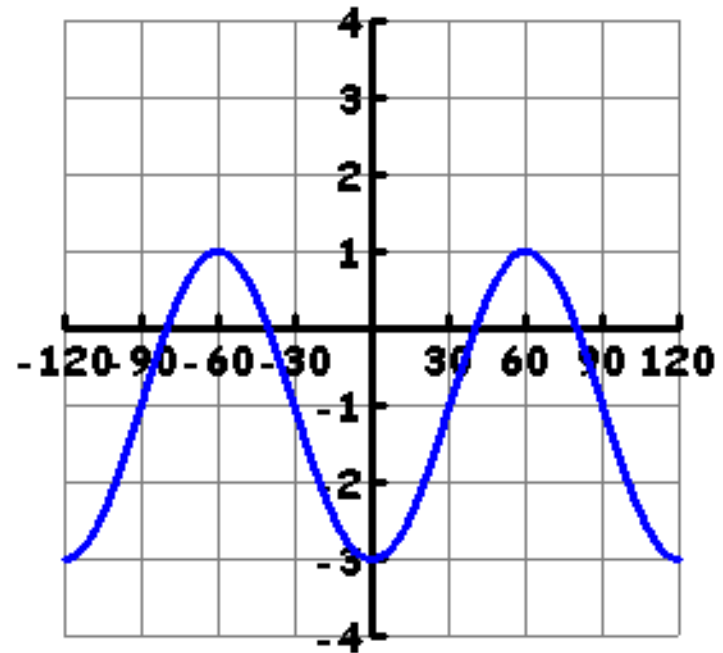**Done Early? Try the ones below this in the Notes!**

Warm-up Answers!

1. Graph one period in the positive and negative direction for y = -2cos(3x) – 1.

Amplitude = |A| = |-2| = 2

graph is reflected over x-axis due to A = -2

Period = 360/B = 360/3 = 120 degrees

Midline   y = D   y = -1

Warm-up Answers!

2. Solve the triangle given b = 16, a = 10, and angle A = 30.

SSA & side across from angle is shorter than other side -> check for ambiguous case!

Angle C_1 = 97
Angle B_1 = 53
c_1 = 19.9

Angle C_2 = 23
Angle B_2 = 127
c_2 = 8

Warm-up Answers!

3. The pilot of an airplane finds the angle of depression to an airport to be 16 degrees. If the altitude of the plane is 6000 meters, find the horizontal distance to the airport.

20,924 meters
(use tan)

HW Answers Packet p. 17-18

1) Sin A = 15/17
   Cos A = 8/17
   Tan A = 15/8

2) Angle B = 66°
   a = 4.5
   c = 10.9

3) x = 185.7 ft

4) x = 41.4 m

5) Angle A = 33°
   c = 26.9
   a = 14.9

6) Angle A = 76. 6°
   Angle C = 40.4^o
   b = 10.99

7) Case 1:   Case 2:
   <B = 48.2^o <B = 131.8^o
   c = 17.3   c = 3.98
   <C = 96.8^o <C = 13.2^o

8) Angle A = 27.7^o
   Angle B = 40.5^o
   Angle C = 111.8^o

9) x = 82.8

10) x = 297.26 ft^2

Packet p. 25-26 Homework Answers

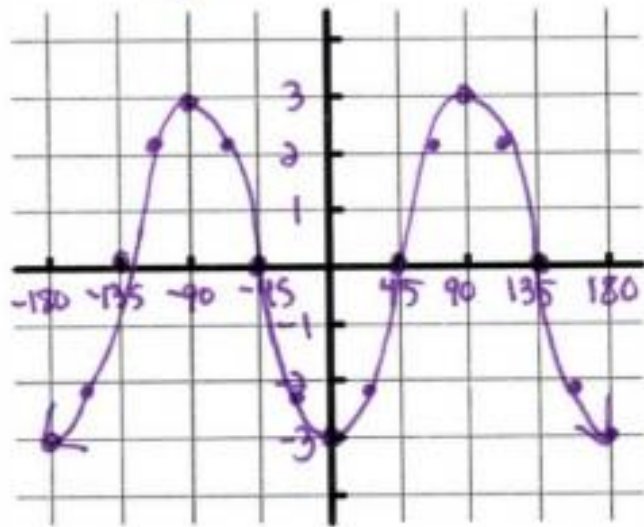Label the axes appropriately.

1. $y = -3 \cos(2x)$ Amplitude: __3__

    Midline: __y=0__   Period: __180°__

$360/2$

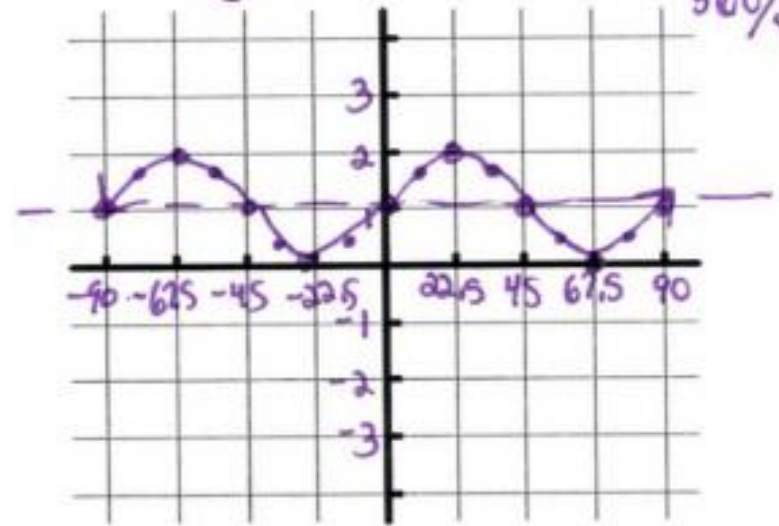2. $y = \sin(4x) + 1$ Amplitude: __1__

    Midline: __y=1__   Period: __90°__

$360/4$

3 & 4) On next slide

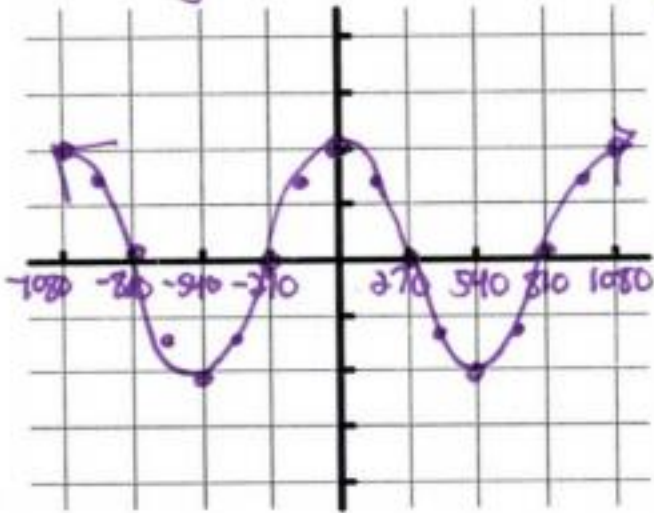5) B   6) A   7) D   8) C

Homework Answers

3. $y = 2 \cos(1/3 x)$

Amplitude: 2
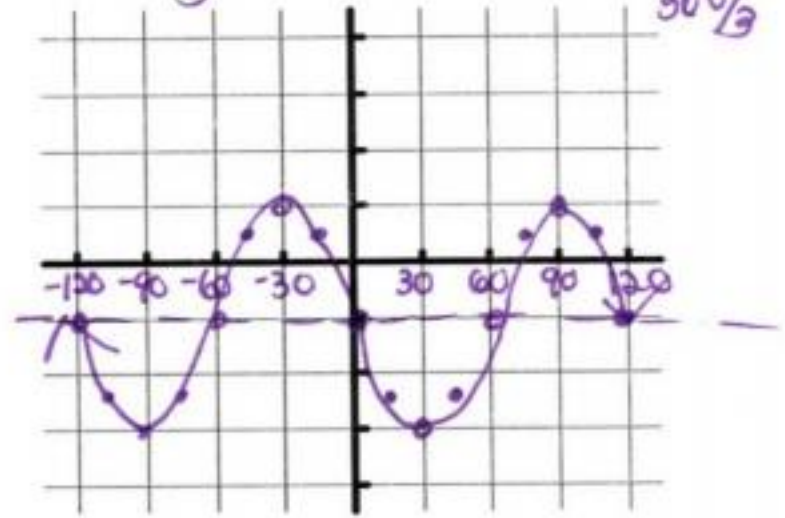
Midline: $y = 0$

Period: 1080

$360/(1/3)$

4. $y = -2\sin(3x) - 1$

Amplitude: 2

Midline: $y = -1$

Period: 120°

$360/3$

9) $y = \sin(1/2 x) + 2$

10) $y = -2.5\cos(180x)$

11) $y = 2\cos(1/3 x) + 3$

12) $y = -3\sin(2x) - 3/2$

13) $y = 1/2 \sin(6°x) - 4$

14) $y = -7\cos(2/3 x) + 1.5$
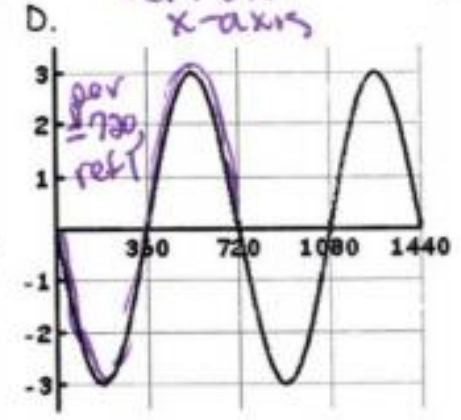
Work shown on the next slides ->

Homework Answers

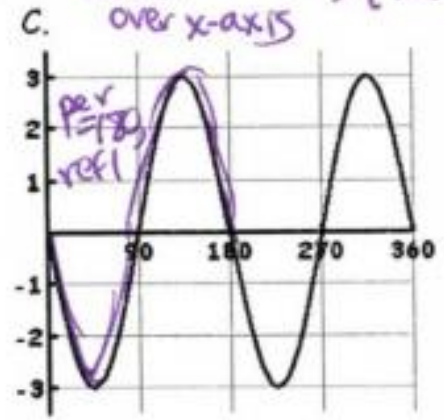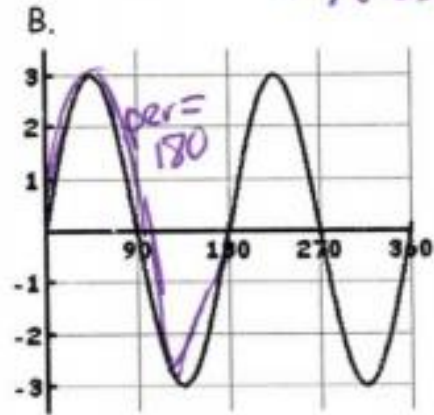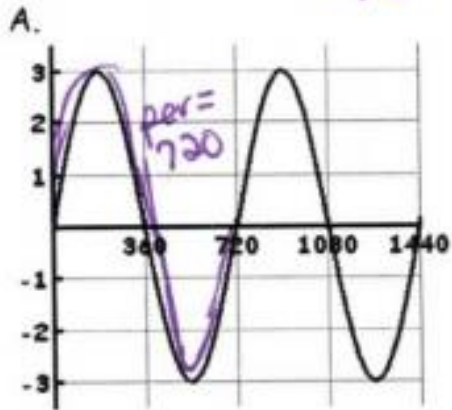For #5 - 8, match the function to graphs A-D shown below.

5. $y = 3\sin(2\theta)$ [B]
amp=3, per=180
360/2

6. $y = 3\sin(1/2\theta)$ [A]
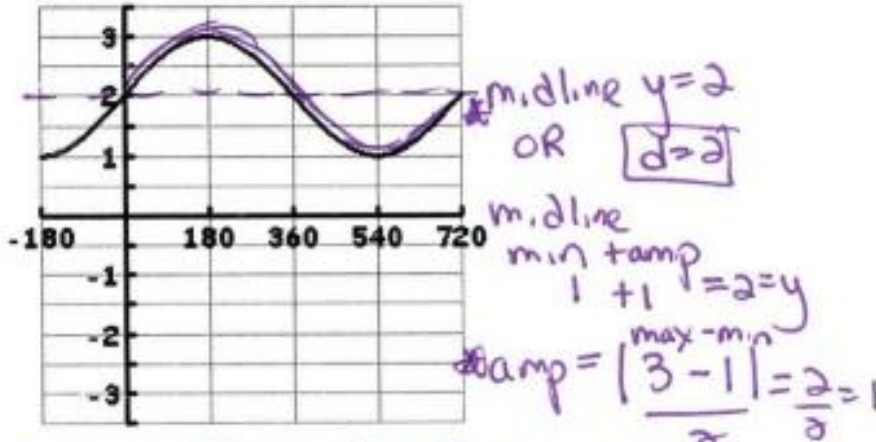amp=3, per=720
360/(½)

7. $y = -3\sin(1/2\theta)$ [D]
amp=3, per=720,
refl.   360/(½)
over x-axis

8. $y = -3\sin(2\theta)$ [C]
amp=3, per=180,
refl over   360/2
x-axis

A.
per=
720

B.
per=
180

C.
per=720
refl

D.
per
=720,
refl

Homework Answers

9. In physics class, Eva noticed the pattern shown in the accompanying diagram on an oscilloscope.

midline $y=2$
OR $\boxed{d=2}$

midline
min + amp
$1 +1 =2=y$

$\#amp = \left|\dfrac{max-min}{2}\right| = \left|\dfrac{3-1}{2}\right| = \dfrac{2}{2} = 1$ $\boxed{a=1}$

$\#per = \dfrac{720-0}{end-start} = 720$

$720 = \dfrac{360}{B}$ $\dfrac{720B}{720} = \dfrac{360}{720}$

$\#sine$
b/c hill then valley

$b = \frac{1}{2}$

$\boxed{y = \sin\left(\frac{1}{2}x\right)+2}$

10.

$\#$ midline $y=0$ $\boxed{d=0}$
min + amp
$-2.5 + 2.5 = 0$

$\#amp = |2.5 - 2.5| = 2.5$
$\dfrac{}{2}$
$\boxed{a=-2.5}$

$\ominus$ because reflected
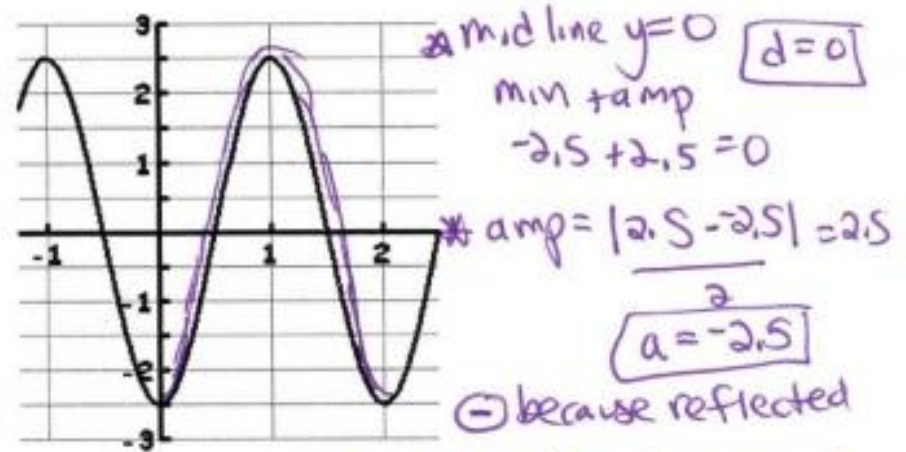
$\#per = \dfrac{end-start}{2-0}$ $\#$ cosine because 1 big hill

$per = 2$

$2 = \dfrac{360}{b}$ $\dfrac{2b}{2} = \dfrac{360}{2}$ $\boxed{y = -2.5\cos(180x)}$

$b = 180$

9) y = sin(1/2x) + 2   10) y = -2.5cos(180x)

Homework Answers

11.

$*amp = \dfrac{|5-1|}{2} = \dfrac{4}{2} = 2$ $\boxed{a = 2}$

$*midline = \dfrac{5+1}{2} = \dfrac{6}{2} = 3$

$y = 3$ $\boxed{d = 3}$

$*per = end - start$
$1080 - 0$
$per = 1080$
$1080 = \dfrac{360}{b}$ $\boxed{b = 1/3}$
$1080b = 360$
$\dfrac{1080b}{1080} = \dfrac{360}{1080}$
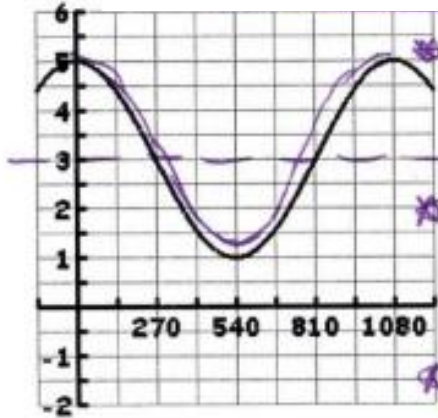
$*cosine because 1$ big valley

$\boxed{y = 2\cos(1/3x) + 3}$

12.
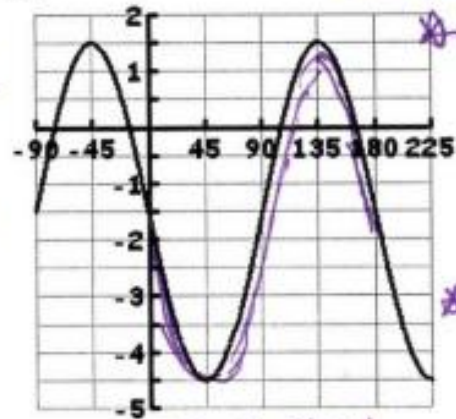
$*amp = \dfrac{|max - min|}{2}$
$= \dfrac{|1.5 - ^-4.5|}{2} = 3$
$\boxed{a = -3}$ ⊖ because reflected

$*midline = \dfrac{max + min}{2}$
$= \dfrac{1.5 + ^-4.5}{2} = -3$ $= \dfrac{-3}{2}$
$y = -3/2$ $\boxed{d = -3/2}$

$*per = end - start$
$180 - 0$
$per = 180$
$180 = \dfrac{360}{b}$ $\boxed{b = 2}$
$180b = 360$

$*sine because$ valley then hill

$\boxed{y = -3\sin(2x) - 3/2}$

11) y = 2cos(1/3x) + 3   12) y = -3sin(2x) – 3/2

Homework Answers

13. a sine function with amplitude = $\frac{1}{2}$, period = 60°, and a vertical shift 4 down

$\boxed{a = \frac{1}{2}} = amp$

$per = \frac{360}{b}$

$VS = midline$

$\boxed{d = -4}$ ⊖ because down

$60 = \frac{360}{b} \quad \frac{60b}{60} = \frac{360}{60}$

$\boxed{b = 6}$

$\boxed{y = \frac{1}{2} \sin(6x) - 4}$

14. a cosine function with amplitude 7, period 540°, a reflection over the x-axis, and vertical shift 1.5 up

$\boxed{a = -7}$

⊖ because reflection

$per = \frac{360}{b}$

$540 = \frac{360}{b}$

$VS = midline$

$\boxed{d = 1.5}$ ⊕ because up

$\frac{540b}{540} = \frac{360}{540}$

$\boxed{b = \frac{2}{3}}$

$\boxed{y = -7\cos\left(\frac{2}{3}x\right) + 1.5}$

13) y = 1/2sin(6°x) – 4   14) y = -7cos(2/3x) + 1.5

Homework Information

Tonight's HW:
Packet Page 27 - 30

Tomorrow Night's HW for after U5 Test:
Cumulative Review HW Wkst
(pick up a copy)

Make sure to study for your TEST on Tuesday!!
Know ALL your formulas and how to use them!

Notes p. 32: Solving more involved Trigonometric Equations

You Try!

3) $2\cos(x) - 1 = 0$

4) $3\cos(x) + 2 = 2\cos x + 1$

x = 60°

x = 180°

Notes p. 32: Solving *even **more***
involved trigonometric Equations

Together!

1) $\cos(2x) - \dfrac{\sqrt{3}}{2} = 0$

2) $\sin^2(x) = 1$

x = 15⁰

x = 90⁰ or -90 ⁰

Notes p. 32 Solving *even **more*** involved trigonometric Equations

You Try!

3) $2\sin(x)\cos(x) = \sqrt{2}\cos x$

4) $\sin(3x) + \dfrac{1}{2} = 0$

x = 90⁰ or 45⁰

x = -10⁰

Review!

On notebook paper ....

Trig Scavenger Hunt

Letter	Question	Work	Solution(s)