A.M.D.G.

Precalculus Accelerated
Spring Practice Final 2014
Part I: CALCULATOR REQUIRED

Name: $\qquad$
Period: $\qquad$ Date: $\qquad$
All Standards covered from Chapter 5 through Chapter 9 will be covered for this exam.

## Multiple Choice

1. $\lim _{x \rightarrow 0} \frac{\sqrt{49-x^{2}}-7}{9 x}=$
(a) $-\frac{1}{9}$
(b) $-\frac{7}{9}$
(c) 1
(d) 0
(e) DNE
2. If $\$ 300$ is invested at $3 \%$ compounded continuously, how long (to the nearest year) will it take for the money to double? (Use the formula $A=P e^{r t}$ )
(a) 26
(b) 25
(c) 24
(d) 23
(e) 22
3. If $\sin y=-\frac{7}{25}$, find $\cos 2 y$.
(a) $-\frac{48}{25}$
(b) $-\frac{14}{25}$
(c) $\frac{134}{625}$
(d) $\frac{527}{625}$
(e) Cannot be determined without knowing the quadrant that $y$ lays in

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4. At what point on the graph of $y=\ln x$ is the tangent line parallel to $x-2 y=1$ ?
(a) $\left(\frac{1}{2}, 2\right)$
(b) $\left(\frac{1}{2}, \ln \frac{1}{2}\right)$
(c) $(1,0)$
(d) $(2, \ln 2)$
(e) $\left(e^{2}, 2\right)$
5. Write the equation of a sine function with the following characteristics:
Amplitude: 5
Period: $3 \pi$
Phase Shift: $\frac{\pi}{3}$
(a) $y=5 \sin \left(3 x+\frac{2 \pi}{9}\right)$
(b) $y=5 \sin \left(3 x-\frac{2 \pi}{9}\right)$
(c) $y=5 \sin \left(\frac{2}{3} x+\frac{2 \pi}{9}\right)$
(d) $y=5 \sin \left(\frac{3}{2} x+\frac{2 \pi}{9}\right)$
(e) $y=5 \sin \left(\frac{2}{3} x-\frac{2 \pi}{9}\right)$

## Free Response

1. Find the domain, zeros, and extreme points of $f(x)=-\sqrt{x^{2}-2 x}$.

Domain:

Zeros:

Extreme Points:

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2. Find the domain and extreme points of $f(x)=x^{2} e^{-x}$.

Domain:

## Extreme Points:

3. Sketch carefully the primary cycle of $y=3-\tan [2(x+4 \pi)]$. Show coordinates of all maxima, minima, and axis points. State the values of $k, A$, Period, and $h$. Write linear equations for sinusoidal axes and asymptotes.
$k=$
$A=$
Period $=$
$h=$

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Part II: NO CALCULATOR ALLOWED

Name: $\qquad$
Period: $\qquad$ Date: $\qquad$
Directions: Complete each of the following NEATLY IN PENCIL in the space provided. Show all work. Round at THREE decimal places. Good Luck!

Multiple Choice (3 pts. each)
6. Let the graph at right represent $f(x)$ on the interval $[-2,2]$. For which values of $x$ is $f^{\prime}(x)=0$ ?
(a) $-2,-1,0,1,2$
(b) 0
(c) $-1,1$
(d) $-2,-1,1,2$
(e) $-1.7,0,1.7$

7. Which of the following lines intersects $y=3 \sin x+2$ ?
(a) $y=-2$
(b) $y=7$
(c) $y=3$
(d) $y=-5$
(e) None of these lines intersect the graph
4. A ship sails 40 miles on a bearing of $30^{\circ}$, then it turns and sails 60 miles on a bearing of $100^{\circ}$. How far away from its starting point and on what bearing is it?
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## Free Response

5. Find all traits and sketch $f(x)=e^{\sqrt{x^{2}-2 x}}$

Domain:

Zeros:
$y$-intercept:

VAs:

EB:

## POEs:

Extreme Points:

Range:
6. Convert the given radian angle measures to degrees
a) $\frac{2 \pi}{15}$
b) $-\frac{8 \pi}{9}$
c) $\frac{31 \pi}{30}$
7. Using the unit circle only, find all values of $0^{\circ}<\theta<360^{\circ}$ for which $\cos \theta=-\frac{1}{2}$

8. Simplify $\sec \frac{4 \pi}{3}+\cot ^{2} \frac{7 \pi}{6}$
9. Given the angle $\theta$ in Quadrant III, find all possible values of $\theta$ for which $\sin \theta=-0.9612616959$
10. Given the angle $\theta$ for which $\cos \theta=0.2756373558$, find the possible values of $\theta$ over the interval $0<\theta<360^{\circ}$.

