A.M.D.G.

### Precalculus Accelerated Spring Practice Final 2014 Part I: CALCULATOR REQUIRED

Period: \_\_\_\_\_ Date: \_\_\_\_\_

Name:

# All Standards covered from Chapter 5 through Chapter 9 will be covered for this exam.

#### **Multiple Choice**

1. 
$$\lim_{x \to 0} \frac{\sqrt{49 - x^2} - 7}{9x} =$$
  
(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  $A = Pe^{rt}$ )
  - (a) 26
  - (b) 25
  - (c) 24
  - (d) 23
  - (e) 22

3. If 
$$\sin y = -\frac{7}{25}$$
, find  $\cos 2y$ .

- (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

#### A.M.D.G.

- 4. At what point on the graph of  $y = \ln x$  is the tangent line *parallel* to x 2y = 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)  $(e^2, 2)$
- 5. Write the equation of a sine function with the following characteristics:

Amplitude: 5 Period:  $3\pi$  Phase Shift:  $\frac{\pi}{3}$ (a)  $y = 5\sin\left(3x + \frac{2\pi}{9}\right)$  (b)  $y = 5\sin\left(3x - \frac{2\pi}{9}\right)$  (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  $f(x) = -\sqrt{x^2 - 2x}$ .

Domain:

Zeros:

Extreme Points:

A.M.D.G.

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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Precalculus Accelerated Spring Practice Final 2014 Part II: NO CALCULATOR ALLOWED

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**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'(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°, then it turns and sails 60 miles on a bearing of 100°. How far away from its starting point and on what bearing is it?

## **Free Response**

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

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  $0 < \theta < 360^{\circ}$ .