

Round to 3 decimal places. Show all work.

1. The absolute minimum of  $y = (-x^2)\sqrt{36-x^2}$  on  $x \in [-6, 6]$  is

- (a)  $-83.138$     (b)  $0$     (c)  $1$     (d)  $\pm 6$     (e)  $83.138$
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2. A particle is moving along the  $x$ -axis in such a way that its velocity at time  $t > 0$  is given by  $v(t) = \frac{\ln t}{t}$ . At what value of  $t$  does  $v$  attain its maximum?

- (a)  $1$     (b)  $e^{1/2}$     (c)  $e$     (d)  $e^{3/2}$   
(e) There is no maximum value of  $v$ .
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3. If  $f(x) = e^{5x^2} + x^4$ , then  $f'(1) =$

- (A)  $e^5 + 1$   
(B)  $5e^4 + 4$   
(C)  $5e^5 + 1$   
(D)  $10e + 4$   
(E)  $10e^5 + 4$
-

4. If  $f(x) = x \tan x$ , then  $f'\left(\frac{\pi}{4}\right) =$

a)  $1 - \frac{\pi}{2}$

b)  $1 + \frac{\pi}{2}$

c)  $1 + \frac{\pi}{4}$

d)  $1 - \frac{\pi}{4}$

e)  $\frac{\pi}{2} - 1$

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5. What is the slope of the line tangent to the curve  $y^2 + x = -2xy - 5$  at the point  $(2, 1)$ ?

(A)  $-\frac{4}{3}$

(B)  $-\frac{3}{4}$

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

(D)  $-\frac{1}{4}$

(E)  $0$

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6. If  $y = x^2 \cos 2x$ , then  $\frac{dy}{dx} =$

- (A)  $-2x \sin 2x$
  - (B)  $-4x \sin 2x$
  - (C)  $2x(\cos 2x - \sin 2x)$
  - (D)  $2x(\cos 2x - x \sin 2x)$
  - (E)  $2x(\cos 2x + \sin 2x)$
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7. If  $f(x) = \cos^2(3 - x)$ , then  $f'(0) =$

- a)  $-2 \cos 3$
  - b)  $-2 \sin 3 \cos 3$
  - c)  $6 \cos 3$
  - d)  $2 \sin 3 \cos 3$
  - e)  $6 \sin 3 \cos 3$
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Honors PreCalculus' 16-17

Name: \_\_\_\_\_

Chapter 10 Test

CALCULATOR ALLOWED

Score \_\_\_\_\_

Round to 3 decimal places. Show all work.

1. Find domain and zeros of  $y = -x\sqrt{36 - 5x - x^2}$ .

2. Find the extreme points of  $y = -x\sqrt{36 - 5x - x^2}$ . Show the algebraic work to support the critical values.

3. Find domain and zeros of  $y = (4 - 3x - x^2)e^{-2x}$ .

4. Find the extreme points of  $y = (4 - 3x - x^2)e^{-2x}$ . Show the algebraic work to support the critical values.

5. Find domain, VAs, and zeros of  $y = \ln(4x - x^3)$ .

6. Find the extreme points of  $y = \ln(4x - x^3)$ . Show the algebraic work to support the critical values.

Honors PreCalculus'16-17  
Chapter 10 Test  
NO CALCULATOR ALLOWED

Name: \_\_\_\_\_

Score \_\_\_\_\_

7.  $D_x \left[ \ln \left( \cos^{3/2} x^{5/3} \right) \right]$

**DO TWO OF THE FOLLOWING THREE SKETCHING PROBLEMS**

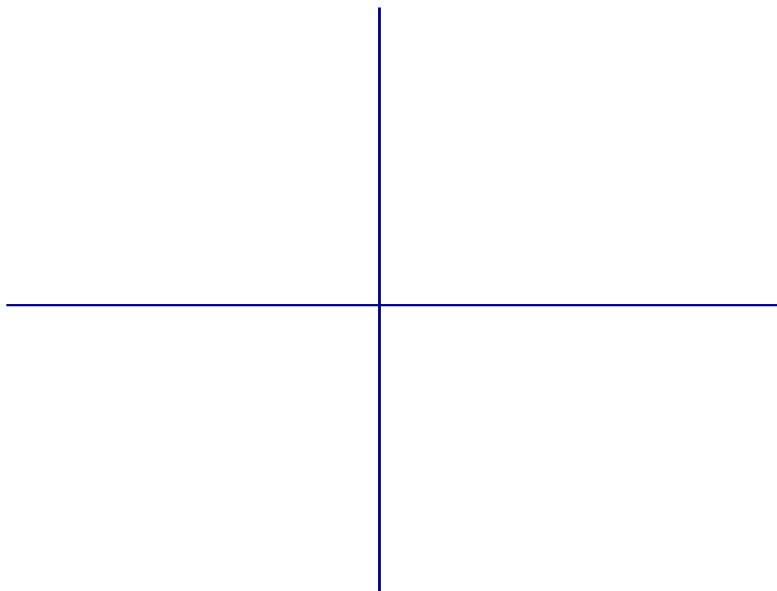
8. Find the traits and **sketch**  $y = -x\sqrt{36 - 5x - x^2}$ .

Domain:

Range:

End Behavior (Left):

End Behavior (Right):



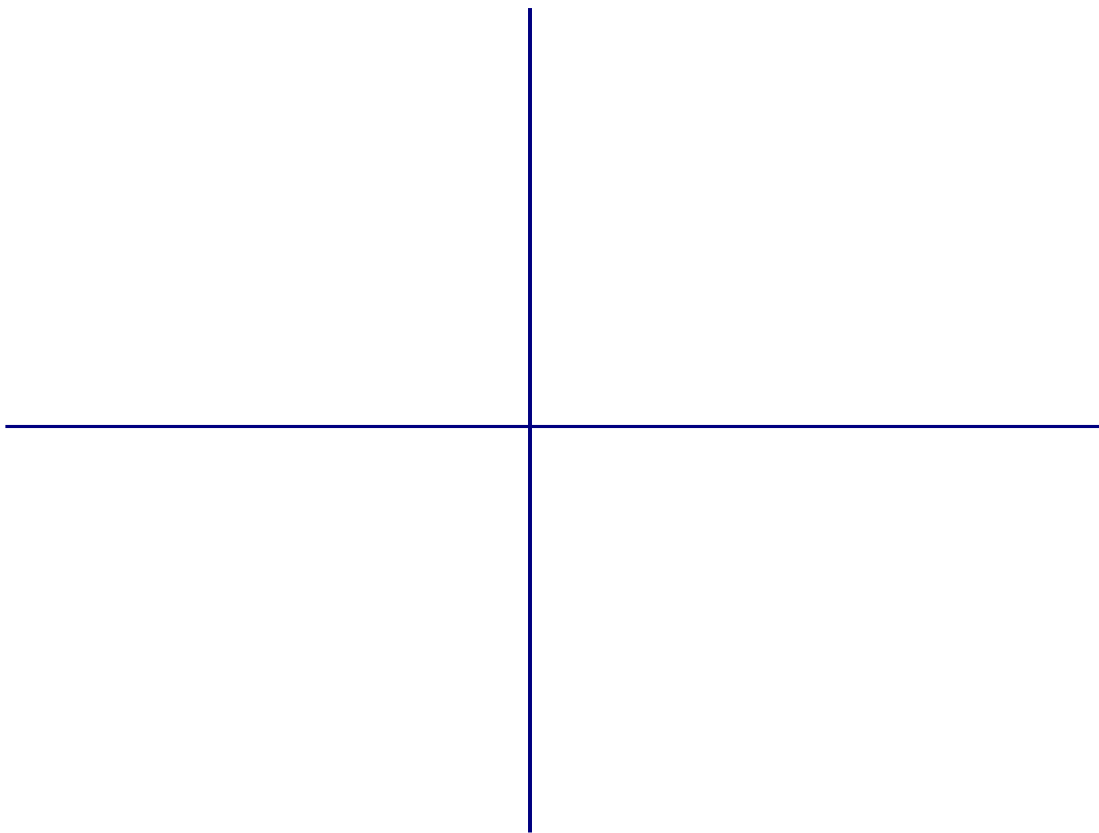
9. Find the traits and **sketch** of  $y = (4 - 3x - x^2)e^{-2x}$ .

Domain:

Range:

End Behavior (Left):

End Behavior (Right):





10. Find the traits and **sketch** of  $y = \ln(4x - x^3)$ .

Domain:

Range:

End Behavior (Left):

End Behavior (Right):

