

Chapter 10 Test

CALCULATOR ALLOWED (20 min)

Score _____

Round to 3 decimal places. Show all work.

1. If $f(x) = (x-1)(x^2+2)^3$, then $f'(x) =$

a) $6x(x^2+2)^2$

b) $6x(x-1)(x^2+2)^2$

c) $(x^2+2)^2(x^2+3x-1)$

d) $(x^2+2)^2(7x^2-6x+2)$

e) $-3(x-1)(x^2+2)^2$

2. If $h(t) = e^{2t}(t+1)$, then $h'(0) =$

a) 0 b) 1 c) 2 d) 3 e) 4

3. 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?

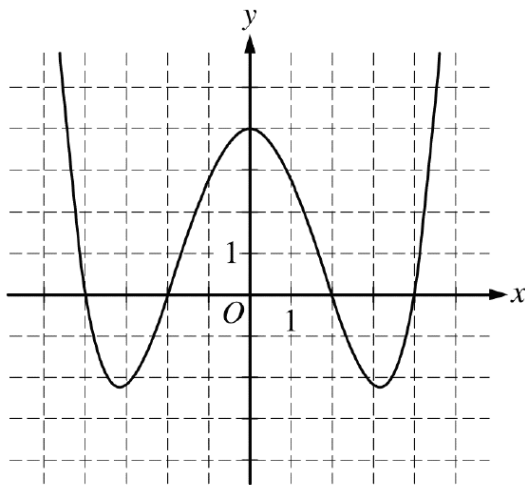
- (a) 1 (b) $e^{1/2}$ (c) e (d) $e^{3/2}$
- (e) There is no maximum value of v .
-

4. Let f be a differentiable function with $f(4) = 3$ and $f'(4) = -2$, and let g be a function defined by $g(x) = x f(x)$. Which of the following is an equation of the line tangent to the graph of g at the point where $x = 3$?

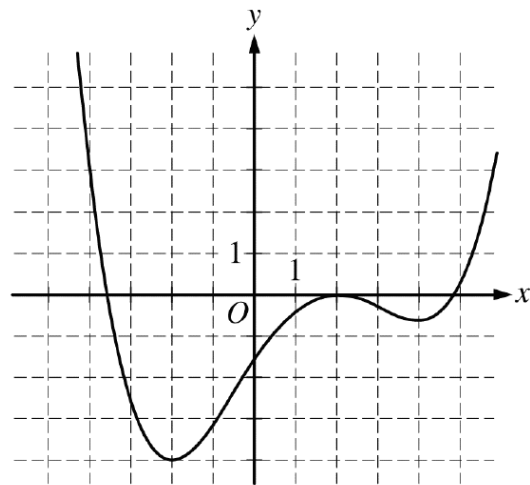
- a) $y - 12 = -2(x - 4)$ b) $y - 12 = \frac{1}{2}(x - 4)$
- c) $y - 12 = -5(x - 4)$ d) $y - 3 = \frac{1}{5}(x - 4)$
- e) $y - 12 = \frac{1}{5}(x - 4)$
-

5. $\lim_{x \rightarrow \infty} \frac{x^2}{e^x} =$

- a) 0 b) ∞ c) $-\infty$ d) 1 e) e^x
-



Graph of f



Graph of g

6. The graphs of the differentiable functions $f(x)$ and $g(x)$ are shown above. If $P(x) = f(x)g(x)$, which of the following will be true about P' ?

- a) $P'(2) < 0$
 b) $P'(2) > 0$
 c) $P'(0) > 0$
 d) $P'(0) < 0$
 e) $P'(0) = 0$
-

7. Given the functions $f(x)$ and $g(x)$ that are both continuous and differentiable, and that have values given on the table below, find $h'(4)$, given that $h(x) = g(x) \cdot f(x)$.

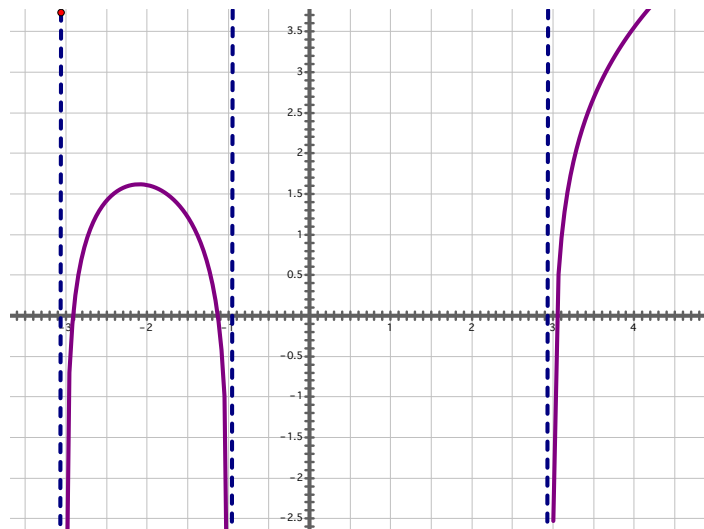
x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
2	4	-2	8	1
4	10	8	4	3
8	6	-12	2	4

- a) -12 b) 24 c) 0 d) -48 e) 62
-

8. Find the end behavior, if any, for $g(x) = e^{-2x}\sqrt{x+1}$.

- a) Left end none; $y = 0$ on the right
 - b) Left end down; $y = 0$ on the right
 - c) Left end $y = 0$; right end up
 - d) Left end $y = 0$; right end none
 - e) $y = 0$ on the left and right
-

9. Which of the following is the equation of this graph?



- a) $y = \ln((x^2 + 9)(x - 1))$
 - b) $y = \ln((x^2 - 9)(x + 1))$
 - c) $y = \ln((9 - x^2)(x + 1))$
 - d) $y = \ln((x^2 - 9)(x - 1))$
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PreCalculus ACC '22-23
Chapter 10 Test – Form A
CALCULATOR ALLOWED

Name:

Score _____

Round to 3 decimal places. Show all work.

1. Find domain and x – intercepts of $y = (x^2 - 8)e^{-\frac{1}{2}x}$.

2. Find the extreme points of $y = (x^2 - 8)e^{-\frac{1}{2}x}$. Show the algebraic work to support the critical values.

3. Find domain and x – intercepts of $y = (x + 1)\sqrt{9 - x^2}$.

4. Find the extreme points of $y = (x + 1)\sqrt{9 - x^2}$. Show the algebraic work to support the critical values.

5. Find domain, VAs, and x – intercepts of $f(x) = \ln(x^3 - 9x)$ on $x \in [-4, 5]$.

6. Find the extreme points of $f(x) = \ln(x^3 - 9x)$ on $x \in [-4, 5]$. Show the algebraic work to support the critical values.

DO TWO OF THE FOLLOWING THREE SKETCHING PROBLEMS

7. Find the traits and **sketch** $y = (x^2 - 8)e^{-\frac{1}{2}x}$.

Domain:

Range:

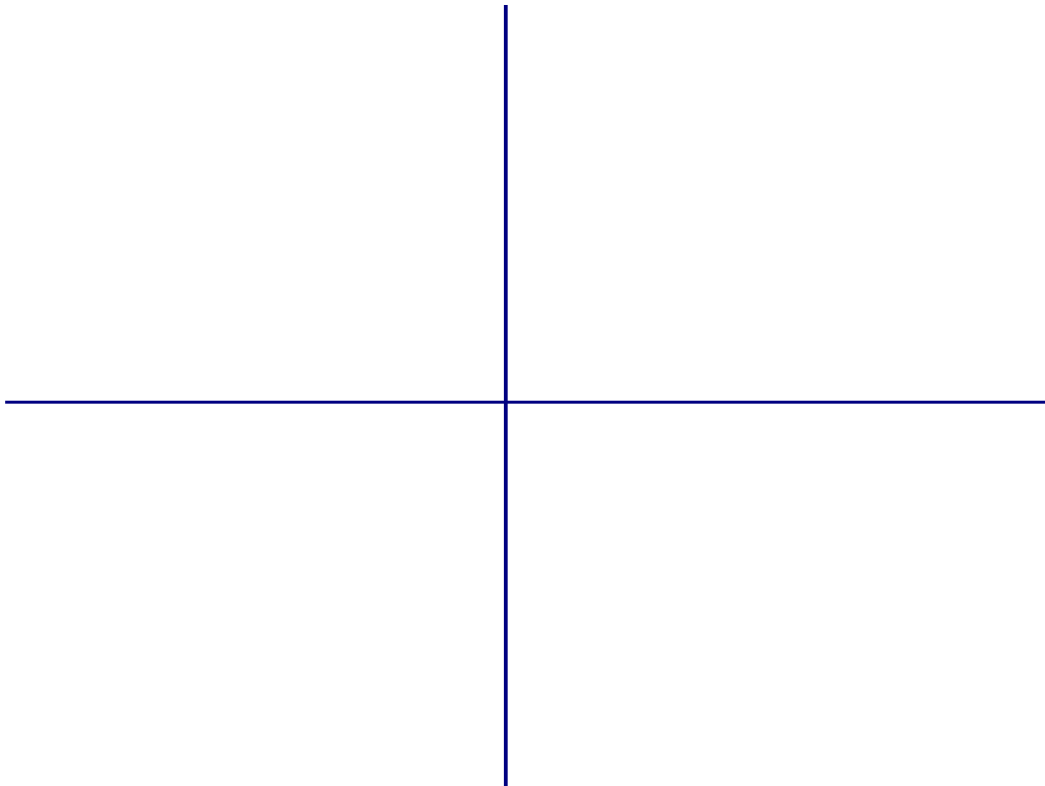
x - intercepts:

y - intercept:

Extreme Points:

End Behavior (Left):

End Behavior (Right):



8. Find the traits and **sketch** of $f(x) = \ln(x^3 - 9x)$ on $x \in [-4, 5]$.

Domain:

Range:

x – intercepts:

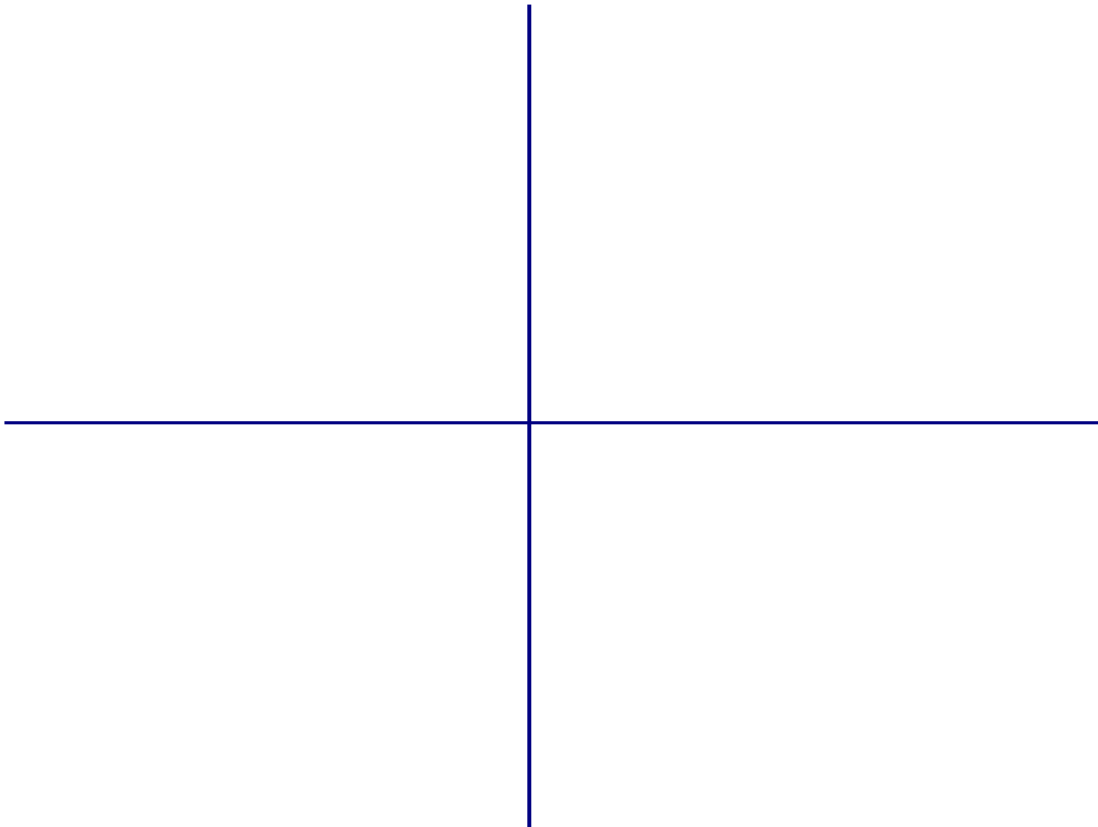
y – intercept:

VAs:

Extreme Points:

End Behavior (Left):

End Behavior (Right):



9. Find the traits and **sketch** of $y = (x + 1)\sqrt{9 - x^2}$.

Domain:

Range:

VAs:

y - intercept:

Extreme Points:

End Behavior (Left):

End Behavior (Right):

