WeBWorK assignment number $231_review_for_232_students is due 01/13/2012 at 12 :00pmEST$.

Every problem on this assignment is something from Math 231 that I will assume that you are familiar with in Math 232. Do your best and do not worry if WebWork won't recognize your answer on a particular problem. Just focus on understanding how to do problems such as these. Your quiz on Friday will be based on one or more of these problems.

You can use the Feedback button on each problem page to send e-mail to the professors.

Give 4 or 5 significant digits for (floating point) numerical answers. For most problems when entering numerical answers, you can if you wish enter elementary expressions such as $2^3 instead of 8, sin(3pi/2) instead of -1, e^(ln(2)) instead of 2, (2 + tan(3)) * (4 - sin(5))^6 - 7/8 instead of 27620.3413, etc.$

Here's the **list of the functions** which WeBWorK understands.

1. (1 pt) TaalmanProblems/set1.1/p1.1.28.pg

Find the domain of the following function.

$$f(x) = \frac{\sqrt{x^2 - 1}}{\sqrt{x^2 - 9}}$$

(Use interval notation, with "inf" for infinity and "U" for union, if needed.)

_____

Answer(s) submitted:

-

(incorrect)

2. (1 pt) TaalmanProblems/set1.6/p1.6_1.34.pg
a) Complete the entries in the table below so that the function described by the table is EVEN.

x	-3	-2	-1	1	2	3
f(x)	-3	—	5	—	4	—

b) Complete the entries in the table below so that the function described by the table is ODD.

x	-3	-2	-1	0	1	2	3
f(x)	-3	—	5	—	—	4	—

Answer(s) submitted:

-
-
-
-
-
-
-

3. (1 pt) TaalmanProblems/set1.7/p1.7.8and9.pg
Given that f is an invertible function, fill in the blanks.

If $(2,9)$ is on the graph of f, then _____ is on the graph of f^{-1}.

If _____ is on the graph of f, then $(-3,9)$ is on the graph of f^{-1}.

Answer(s) submitted:

-
-

(incorrect)

4. (1 pt) TaalmanProblems/set2.7/p2.7.50.pg
Find the intervals on which

$$f(x) = \frac{(x+4)(x-1)}{7x+8}$$

is positive and the intervals on which f is negative. Express your answers in interval notation.

f is positive on _____.

f is negative on _____.

Answer(s) submitted:

-
-

(incorrect)

5. (1 pt) TaalmanProblems/set4.1/p4.1.32and34and36.pg

Find the domains of the following functions.

$f(x) = (3+x)^{-3}$ _____

$g(x) = (3+x)^{\frac{3}{2}}$ _____

$h(x) = \sqrt[5]{3+x}$ _____

Answer(s) submitted:

-
-
-

(incorrect)

6. (1 pt) TaalmanProblems/set5.4/problem2.pg

Find the global maximum value and the global minimum value for the function $f(x) = 2x^3 + 21x^2 + 72x + 6$ on $[-6, -1]$. If an extreme value does not exist, type **NONE** as your answer.

Global maximum value of f: _____

occurring at x-value(s): _____

Global minimum value of f: _____

occurring at x-value(s): _____

Answer(s) submitted:

-
-
-
-

(incorrect)

7. (1 pt) TaalmanProblems/set5.4/problem4.pg

A landowner needs to enclose a rectangular space with total area of 775 sq. ft immediately next to a river. If the river does not require any fencing along that edge, what is the least amount of fencing necessary to enclose this area?

Total fencing: _____ (ft)
Length parallel to river: _____ (ft)
Length perpendicular to river: _____ (ft)
Answer(s) submitted:

-
-
-

(incorrect)

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8. (1 pt) TaalmanProblems/set6.1/p6.1.55.pg
Use polynomial long division to write

$$f(x) = \frac{x^5 - 20}{x^2 - 4x + 1}$$

as the sum of a polynomial and a proper rational function.

$f(x) = $ _____ + _____

Answer(s) submitted:

-
-
-

(incorrect)

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9. (1 pt) TaalmanProblems/set6.2/p6.2.32and34and36.pg
Calculate the following limits. If a limit does not exist, enter "DNE."

$$\lim_{x \to -\infty} \frac{6 - x^6}{x^4 + 2x + 3} = \underline{\qquad}$$

$$\lim_{x \to \infty} \frac{x^4 - 59x + 11}{3x^5 + 18} = \underline{\qquad}$$

$$\lim_{x \to \infty} \frac{(3x+7)(-8x+5)}{(6x-3)(1x+6)} = \underline{\qquad}$$

Answer(s) submitted:

-
-
-

(incorrect)

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10. (1 pt) TaalmanProblems/set6.2/p6.2.51.pg
Find all roots, holes, and any asymptotes (vertical, horizontal, slant, or curve) of

$$f(x) = \frac{(x+7)(x-4)^2}{(x-4)(x+1)}.$$

If the function has more than one of an attribute, enter your answer as a comma-separated list. If the function does not have one of the attributes, enter "None."

Roots: $x = $ _____
Holes: $x = $ _____
Vertical Asymptotes: $x = $ _____
Horizontal/Slant/Curve Asymptote: $y = $ _____

What type of asymptote do you have above?

- A. slant asymptote
- B. curve asymptote
- C. horizontal asymptote
- D. none of the above

Answer(s) submitted:

-
-
-
-
-

(incorrect)

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11. (1 pt) TaalmanProblems/Set6.3/problem1.pg

Compute the derivative of $f(x) = \frac{2x^2 - 4x + 5}{5x - 3}$.

$f'(x) = $ _____
Answer(s) submitted:

-

/(incorrect)

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12. (1 pt) madisonLibrary/Algebra/AbsValue/abs_value_piecewise_002.pg
Rewrite the formula $|2x + 9|$ as a piecewise function.

Express your answer in the form of

$$|2x + 9| = \begin{cases} A, & x >_\geq c \\ B, & x <_\leq c \end{cases}$$

where
$A = $ _____ with x [?] c
$B = $ _____ with x [?] c
and $c = $ _____
Note: The pop-up menus are to choose whether $x = c$ belongs with $x > c$ or $x < c$, whichever interval did not involve changing the sign.

Answer(s) submitted:

-
-
-
-
-

(incorrect)

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13. (1 pt) madisonLibrary/Calc/Deriv_Applications/formula_concavity_002.pg

Determine the concavity of the function $f(x) = 2x^3 - 2x^2 + 5x - 7$.

Compute $f''(x) = $ _____

List the intervals where f is concave up and where it is concave down (comma-separated). Type **NONE** if there are no such intervals.

Concave-up: _____
Concave-down: _____

List the inflection points (*x*-values, comma-separated). Type **NONE** if there are none.

Inflection points: _____

Answer(s) submitted:

-
-
-
-

(incorrect)

14. **(1 pt)** madisonLibrary/Calc/Deriv_Applications-/formula_incr_decr_004.pg

Find the first derivative of the function $f(x) = 2x^3 - 3x^2 - 72x - 7$.

$f'(x) = $ _____

Use the derivative to determine intervals where $f(x)$ has is increasing or decreasing. For each, create a list of open intervals, separated by commas (not a union). If the list is empty, type **NONE**. Type **INF** for ∞.

$f(x)$ is increasing on the intervals: _____
$f(x)$ is decreasing on the intervals: _____

Answer(s) submitted:

-
-
-

(incorrect)

15. (1 pt) madisonLibrary/Calc/Deriv_Implicit/implicit_diff_001.pg

Assuming that y is a function of x, compute

$\frac{d}{dx}[5x^3 y] = $ _____

Type **Dy** to represent $\frac{dy}{dx}$.

Answer(s) submitted:

-

(incorrect)

16. (1 pt) madisonLibrary/Calc/Deriv_Rules/chain_rule_004.pg

Compute

$\frac{d}{dx}[\frac{1}{\sqrt{3x^2 - 5x}}] = $ _____

(Show the student hint after 2 attempts:)
First, think about your function as a composition of $\frac{1}{\sqrt{x}}$. Use the chain rule.

Answer(s) submitted:

-

(incorrect)

17. **(1 pt)** madisonLibrary/Calc/Deriv_Rules/deriv_product_003.pg

Compute the derivative of $f(x) = (2x^2 + x + 1)(5x - \frac{2}{x})$.
(Repeat this problem for additional practice.)

$f'(x) = $ _____

Answer(s) submitted:

-

(incorrect)

18. (1 pt) Library/270/setDerivatives5ChainRule/ur_dr_5_20.pg

Let
$$f(x) = (-2x^2 + 2)^8 (-5x^2 + 7)^{15}$$
$f'(x) = $ _____

Answer(s) submitted:

-

(incorrect)

19. **(1 pt)** Library/Indiana/Indiana_setDerivatives20Antideriv-/c3s10p1.pg

Given
$$f''(x) = 6x + 5$$
and $f'(-1) = 1$ and $f(-1) = -3$.
Find $f'(x) = $ _____
and find $f(3) = $ _____

Answer(s) submitted:

-
-

(incorrect)

20. **(1 pt)** Library/Indiana/Indiana_setDerivatives20Antideriv-/s3_10_57.pg

A stone is thrown straight down from the edge of a roof, 1150 feet above the ground, at a speed of 9 feet per second.
A. Remembering that the acceleration due to gravity is -32 feet per second squared, how high is the stone 2 seconds later? _____

B. At what time does the stone hit the ground? _____
C. What is the velocity of the stone when it hits the ground? _____

Answer(s) submitted:

-
-
-

(incorrect)

21. **(1 pt)** Library/Rochester/setDerivatives8RelatedRates-/csuf_dr_8_1.pg

Air is being pumped into a spherical balloon so that its volume increases at a rate of 80cm³/s. How fast is the surface area of the balloon increasing when its radius is 7cm? Recall that a ball of radius r has volume $V = \frac{4}{3}\pi r^3$ and surface area $S = 4\pi r^2$.

_____

Answer(s) submitted:

22. (1 pt) Library/Rochester/setDerivatives20Antideriv/s3_10_8func.pg

Consider the function $f(x) = \dfrac{9}{x^2} - \dfrac{2}{x^7}$.

Let $F(x)$ be the antiderivative of $f(x)$ with $F(1) = 0$.

Then $F(x) = $ _____

23.   (1   pt)   Library/Rochester/setDerivatives22Graphing-
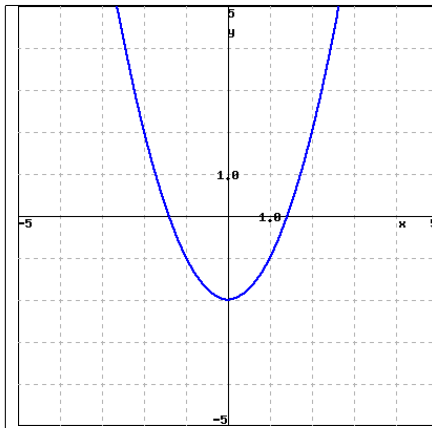/S04.03.DerivativesShapeGraph.PTP10.pg

Use properties of functions to match each of the following functions with its graph. *Do not use your calculator.* Clicking on a graph will give you an enlarged view.

? 1. $f(x) = x^2 - 2$
? 2. $f(x) = -x^2 - 3$
? 3. $f(x) = x^2 + 2$
? 4. $f(x) = -x^2 + 3$
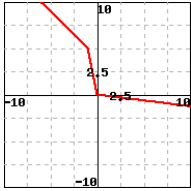
A

B

C

D
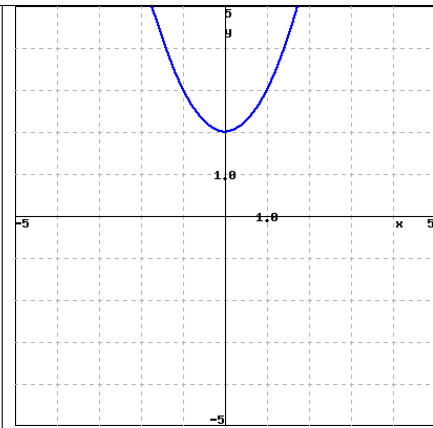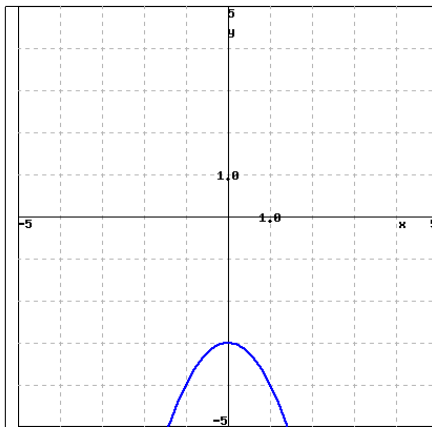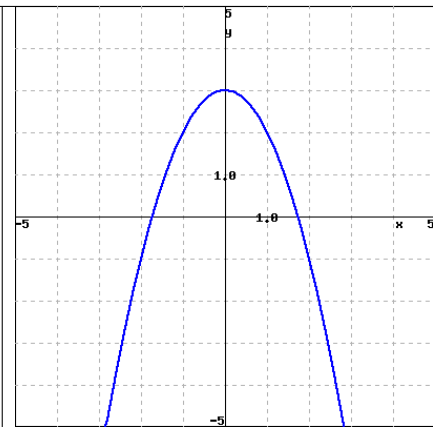
24. (1 pt) unionLibrary/setFunctionInverses/ur_inv_3.pg
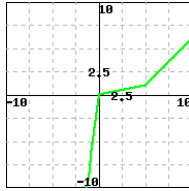
Find the graph of the inverse of the function f graphed below.
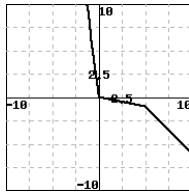
The graph of f
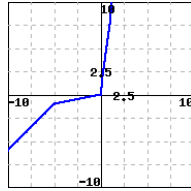

Graph **A**   Graph **B**   Graph **C**

The inverse of the function f is graphed in Graph (A, B or C): ___

25. (1 pt) unionLibrary/setDervVelocity/3-3-19.pg

Suppose that an object moves along an s-axis so that its location is given by $s(t) = t^2 + 4t$ at time t. (Here s is in meters and t is in seconds.)

(a) Find the average velocity of the object in meters per second over the time interval $t = 2$ to $t = 9$ seconds.

Average velocity = _____ m/s.

(b) Find the instantaneous velocity of the object in meters per second at $t = 6$ seconds.

Instantaneous velocity = _____ m/s.